H.R. 5003, THE UNIFORM SCIENCE AND TECHNOLOGY RESEARCH AND DEVELOPMENT UTILIZATION ACT

HEARINGS

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SCIENCE, RESEARCH AND TECHNOLOGY
OF THE

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H.R. 5003—THE UNIFORM SCIENCE AND TECHNOLOGY RESEARCH AND DEVELOPMENT UTILIZATION ACT

TUESDAY, MAY 15, 1984

House of Representatives,
Committee on Science and Technology,
Subcommittee on Science, Research and Technology,
Washington, DC.

The subcommittee met, pursuant to notice, at 9:49 a.m., in room 2325, Rayburn House Office Building, Hon. Doug Walgren (chairman of the subcommittee) presiding.

Mr. **Walgren**. Some things are really crucial, and that's what I was doing, so I apologize for being late.

I understand, Dr. Merrifield, that you have a commitment that you have to meet very shortly; and with that in mind, let me just introduce these hearings and ask if other members have statements that they would like to make.

Mr. **Sensenbrenner**. Mr. Chairman, I have a statement that I would like to make, and also some testimony; and in consideration of Dr. Merrifield's timeframe, I would just like to ask unanimous consent that both the statement and the testimony be inserted in the record at this point.

Mr. **Walgren**. Without objection, and I will insert an opening statement and maybe come back to it in comments in a little bit. Let's proceed, then, with Dr. Merrifield.

[The opening statement of Mr. Walgren and the statements of Mr. Sensenbrenner follow:]

Opening Statement by Hon. Doug Walgren, Chairman, Subcommittee on Science, Research and Technology

Today, we begin two days of legislative hearings on H.R. 5003, our latest attempt to devise a more effective and consistent federal patent policy. Getting the maximum benefit for the American taxpayer from his tax dollars spent on research and development is an over-riding concern. We are looking for ways to modify patent ownership patterns to push products based on government research into domestic markets and to improve our balance of trade.

The Committee has a long legislative history on these issues dating back to the early days of the space program. We have addressed the specific issues in H.R. 5003 in each of the last four Congresses and in 1980 in P.L. 86-517 gave small business and non-profit organizations the right to retain patents to inventions they discover while working under government contract.

Despite this extensive record, we do not wish to prejudge the contents of H.R. 5003. We would like to develop a superior legislative record over the next two days that includes the best ideas of the major groups affected by federal patent policy and modify H.R. 5003 accordingly. We also plan to write to each agency affected specifically by this legislative change to make sure we have not inadvertently made their missions more difficult to achieve through our proposals. We have three years of experience under 96-517; we have decades of experience in agencies like NASA and the Department of Agriculture. We want to learn of successes and failures of these programs and modify our comprehensive legislation accordingly.

We hope to build on the best of the past as we look for more effective ways to translate the fruits of government-sponsored research into a better standard of living for all Americans. We must critically review what now exists in technology utilization programs, saving what works of our technology utilization programs now in existence while upgrading the rest. Uniformity for uniformity's sake will not work in a governmental research program ranging from weapons development to increasing crop yield. Standardization of common elements in a wide-ranging research program while leaving room for diversity can work.

Therefore, we look forward to receiving the combined wisdom of the distinguished witnesses who have consented to appear before us today and tomorrow and welcome statements for the record during the next three weeks by anyone else desiring to contribute to our efforts.

OPENING STATEMENT OF HON. F. JAMES SENSENBRENNER, JR., SCIENCE, RESEARCH AND TECHNOLOGY SUBCOMMITTEE HEARING ON H.R. 5003

Mr. Chairman, I thank you for this opportunity to address the Subcommittee during its consideration of legislation which would amend our patent laws with respect to research conducted on behalf of the Federal Government. As my colleagues on the Subcommittee are aware, I have, along with the gentleman from New Hampshire, Mr. Gregg, introduced legislation on this subject. This legislation, H.R. 4964 will stimulate increased industrial innovation and productivity by encouraging the commercialization of technologies developed under Federal support. The Uniform Patent Procedures Act of 1984 has been referred to the House Judiciary Committee and is virtually identical to H.R. 5003, of which I am also a co-sponsor and the subject of this morning's hearing.

Mr. Chairman, I would like to ask that my prepared statement be included in the record so I might summarize my thoughts on the need for this legislation.

The retention by the Federal Government of the Title to any patents developed by federally sponsored research and development is counterproductive since the Federal Government cannot commercialize and market products or processes and the absence of exclusivity, which is secured through a patent, prevents the private sector from investing the capital necessary to market the products or processes. Consequently, the economic benefits from the federally sponsored research and development are not realized. It is estimated that only about five percent of the more than 28,000 patents owned by the Federal Government are utilized in the private sector.

The legislation which has been introduced would realize our investment in federally sponsored research and development by placing the title to any inventions, except in special circumstances, to the contractors who conduct the federally sponsored research and development, while at the same time preserving the right of the Federal Government to utilize the discovery royalty free. Thus, the commercialization of patents developed under federally sponsored research and development will be encouraged by providing the private sector with an incentive to invest their financial resources, thereby stimulating the increased use of these new concepts, processes and technologies. Further, retention of title will encourage many industrial scientists and engineers to participate in federal research efforts, thereby broadening and strengthening our research efforts.

Also this legislation builds upon the University and Small Business Patent Procedures Act of 1980, by removing certain limitations placed upon university licensing in that Act in order to encourage more collaboration between industry and universities.

I thank you, Mr. Chairman, for holding these hearings and look forward to working with you and my colleagues on the Subcommittee on this issue.

TESTIMONY OF HON. F. JAMES SENSENBRENNER, JR., SCIENCE RESEARCH AND TECHNOLOGY SUBCOMMITTEE HEARING ON H.R. 5003

Mr. Chairman, I thank you for the opportunity to address the Subcommittee during its consideration of legislation that would amend our patent laws with respect to research conducted on behalf of the Federal Government. As my colleagues on the Subcommittee are aware, I have along with our colleague from New Hampshire, Mr. Gregg, introduced legislation on this subject. This legislation, H.R. 4964, The Uniform Patent Procedures Act of 1984 will stimulate increased industrial innovation and productivity by encouraging the commercialization of technologies developed under federal support. It has been referred to the House Judiciary Committee and is virtually identical to H.R. 5003, introduced by the Chairman of the Science and Technology Committee, Mr. Fuqua, of which I am also a co-sponsor.

The economic and social vitality of this country is linked to our innovative capacity. New innovations increase our productivity in services, manufacturing and agriculture. It has been estimated that technological innovation was responsible for about one-third of the economic growth of this country from 1929 to 1969 and about 48 percent between 1948 and 1969. In addition, the positive trade balance in advanced technology products, in 1980 of $31 billion contributes to domestic employment and economic health.

While recent studies have concluded that the United States still retains technological leadership, concerns are being expressed over the apparent decline in U.S. innovation relative to past levels and to foreign competition.

Domestic patenting by U.S. inventors declined by 34.2% during the period 1972–1982, while U.S. patents to foreign inventors increased.

Foreign patenting has increased every year from 1965 to 1982, except for 1975. In 1982, 41 percent of all U.S. patents granted will be to foreign inventors.

During the period 1971–1981, the rate of patenting dropped in almost every product filed, so that the rate of patenting for all fields together decreased by an average 4.6 percent per year.

In 1982, 3 percent of all U.S. patents granted were issued to the Federal Government.

Only about 5 percent of the more than 28,000 patents owned by the Federal Government are utilized in the private sector.

The Federal Government's outlays for research and development were an estimated $42.4 billion in 1983. This is 5.6 percent of the total outlays in the 1983 budget. While it is difficult to measure, the results of this expenditure produced new products or processes, which, if patented, are retained by the Federal Government.

The retention by the Federal Government of the title to any patents developed by federally sponsored research and development is counterproductive, since the Federal Government cannot commercialize and market products or processes and the absence of exclusivity, which is secured through a patent, prevents the private sector from investing the capital necessary to market the products or processes. Consequently, the economic benefits from the Federally sponsored research and development are not realized.

The legislation that has been introduced, H.R. 5003 and H.R. 4964 will realize our investment in federally sponsored research and development by placing the title to any inventions, except in special circumstances, in the contractors who conduct the federally sponsored research and development, while at the same time preserving the right of the Federal Government to utilize the discovery royalty free. Thus, the commercilization of patents developed under federally sponsored research and development will be encouraged, by providing the private sector with an incentive to invest their financial resources, thereby stimulating the increased use of these new concepts, processes and technologies. Further, retention of title will encourage many industrial scientists and engineers to participate in federal research efforts, thereby broadening and strengthening our research efforts.

Finally, this legislation builds upon the University and Small Business Patent Procedures Act of 1980, by removing certain limitations placed upon university licensing in that Act, in order to encourage more collaboration between industry and universities.

Mr. Chairman, I urge my colleagues to support this effort embodied in H.R. 5003 and H.R. 4964 to enhance the economic competitiveness of this country without sacrificing the economic principles upon which it was founded.

A section-by-section analysis of H.R. 4964 follows:

SEC. 1. Title.

SEC. 2. Conforms Pub. L. 96–517 chapter designations to U.S.C.A. codification.

SEC. 2A. Adds a new chapter to Title 35, USC, the provisions of which would do the following.

SEC. 212. States the policy objective of the Act, to "insure that all inventions made with federal support are used in a manner to promote free competition and enterprise."

SEC. 213. Definitions used in the Act.

SEC. 214. Authorizes the Secretary of Commerce to issue implementing regulations for the Act.

SEC. 215. Provides that Federal contractors may automatically own inventions they make under Government R&D unless:

(1) it is determined that the discovery is needed for foreign intelligence or counterintelligence purposes;

(2) the contractor is not located in the U.S., or is a foreign government; or

(3) it is determined on a case-by-case basis that exceptional circumstances require Federal ownership.

Such determinations will be made in writing and filed with the Secretary of Commerce to prevent abuse of these exceptions to contractor ownership. In cases of abuse, the Secretary shall notify the Administrator of the Office of Federal Procurement Policy who may issue guidelines ending such practices.

This section also provides that, in instances where the contractor does not elect to file a patent application in the United States or abroad, the agency may then assert ownership if it desires to do so.

In addition, Section 215 also stipulates that the agency may use a subject invention royalty free and can require that it be kept updated on utilization of the contractor.

SEC. 216. Provides that agencies may force contractors to grant licenses to competitors for using an invention made under Federal R&D if effective steps are not being taken toward commercialization; to alleviate serious health or safety needs not being satisfied by the contractor; or to meet requirements for public use specified by Federal regulations not being satisfied by the contractor. Agency determinations on mandatory licenses may be appealed by the contractor within 60 days to the United States Claims Court.

SEC. 217. Protects contractors from the threat agencies might require them to give up privately developed technologies to competitors in order to secure a contract, unless specifically approved by the agency head. Such determinations can be made only after an agency hearing with prompt notification to the contractor.

SEC. 2B. Chapter headings redesignated.

SEC. 2C. Repeals certain limitations placed upon university licensing by present law, in order to encourage more collaboration between industry and universities.

SEC. 3. Repeals old patent policies so that the Act may be implemented uniformly.

SEC. 4. Specifies that nothing in this Act shall be construed to grant any civil or criminal immunity from any antitrust law of the United States.

SEC. 5. Provides that the Act becomes effective six months after enactment, and authorizes agencies to apply its provisions to pre-existing contracts where deemed appropriate.

SEC. 6. Provides that the Secretary of Commerce shall report to the Congress within 24 months, and every two years thereafter, on the implementation of this Act along with any recommendations for legislative or administrative changes.

STATEMENT OF DR. D. BRUCE MERRIFIELD, ASSISTANT SECRETARY FOR PRODUCTIVITY, TECHNOLOGY AND INNOVATION, DEPARTMENT OF COMMERCE, ACCOMPANIED BY NORMAN LATKER, DIRECTOR, FEDERAL TECHNOLOGY MANAGEMENT POLICY, DEPARTMENT OF COMMERCE

Dr. **MERRIFIELD.** Thank you, Mr. Chairman. I would like to submit my written testimony and then comment, if that is possible.

Mr. **WALGREN.** Please do.

Dr. **MERRIFIELD.** I also have Mr. Norman Latker here with me. He's our Director of Federal Technology Management Policy.

I'd like to support this law very strongly. I think it's an exceedingly important one. We spend about $45 billion a year now on federally funded technology, very little of which ever really gets translated into the commercial sector. The Government owns about 28,000 patents; less than 4 percent have ever been licensed. This is really an appalling set of statistics, and I think that almost anything would be better than what we've been doing in the past. It's very important now, I believe, to remove both the barriers to translation of this technology into the private sector and also to provide incentives for doing that.

You have to remember, now, that the pace of technology is so rapid that the time frame in which to utilize technology is telescoping. So it's very urgent. We can't wait for years and years to make available technology that we've developed. It's awfully important that we get it into the private sector quickly so that we can use it and be competitive in the world markets that we now compete in.

I think one critical barrier is the mind set that we've had in the past, that the Government should own technology. The Government should not own any technology unless it's perhaps for national security purposes. The sooner we can identify methods to get the Government out of the ownership of technology and get the private sector involved, the higher the probability of utilizing this tremendous asset, which is unparalleled in the world. We just have to find ways to do that.

It seems to me that, first of all, the grant back of technology on an exclusive basis to the private sector, to contractors who are doing the work, is one of the most potent incentives that we can put in place. Also, it's important to remove the bureacractic barrier to translation, which takes many, many months and often doesn't even work at all.

The point is that many contractors, potential contractors, big companies with tremendous capabilities don't bid at all for Government contracts because they just know that it's going to be such a bureaucratic process to try to get access to the technology for commercial purposes downstream. They don't even bid, and we're opting out of a lot of capable people and resources that otherwise could be available to the Government. I think it's very important now that a clear perception of availability of that technology on an exclusive basis should be there.

You have to understand, it's not a step-by-step process; it's a continuous process. When a contractor does work and an inventor, a scientist, comes up with a new idea in a laboratory, opportunities for commercial potential exist at that point. If the incentive is already in place so that laboratory, that company knows that it can acquire the proprietary rights for that technology downstream, they will begin almost immediately to allocate internal funds to develop that technology.

So you multiply the total amount of R&D that gets done and you telescope the time frame within which that technology is translated into the private sector. It's not a matter of getting to the end of the work and then deciding that it's got to be licensed and then going through some bureaucratic process; that never happens. I think exclusive licensing is one of the most important incentives now that we can put in place.

The ultimate benefit to the Government, of course, is not in minor royalties for technology that's licensed back ultimately, but rather in the tremendous new allocation of R&D to develop that early stage technology. And most of this technology is in an early stage, far from commercialization, so it takes a major investment in risk and time to translate it into the commercial sector; therefore it's very important that these incentives be there.

The ultimate benefit to the Government comes back in new jobs and tremendous new revenues that pay taxes. That's why it's so important now that we do make this effort to get the technology translated back into the private sector.

I think our experience in the Center for Utilization of Federal Technology, the CUFT organization is relevant. Last year, we licensed a number of these patents with considerable effort, but those that we licensed have already committed to at least $100 million of new R&D, and the potential of that is really hundreds and hundreds of millions of new sales and tax revenues and new jobs that come back.

So it seems to me that this is the time now to push this understanding, and understand that only the private sector can translate things effectively into the commercial world. Here's a tremendous asset that now is going to waste; we just have to do something about it.

Thank you.

[The prepared statement of Dr. Merrifield follows:]

STATEMENT OF D. BRUCE MERRIFIELD, ASSISTANT SECRETARY OF COMMERCE FOR PRODUCTIVITY, TECHNOLOGY AND INNOVATION, BEFORE THE SUBCOMMITTEE ON SCIENCE, RESEARCH AND TECHNOLOGY OF THE COMMITTEE ON SCIENCE AND TECHNOLOGY

The economic growth and prosperity of our Nation depend heavily on the extent to which we remain in the forefront of the development and application of new technologies. Industry, not government, will make most of the decisions allowing this to happen. Nonetheless, it is vitally important that government remove any barriers to such decisions and foster a climate encouraging the development of new technologies. This Administration is committed to reducing such barriers and providing the appropriate incentives.

Government patent policy is one of the areas in need of reform. The Federal Government funds a substantial portion of the total R&D performed in the United States. It is important that the terms and conditions imposed upon the contractors and grantees that perform this research are structured so as to encourage commercialization of new ideas and technologies that result from such work. We must foster an atmosphere in which industry will have the necessary incentives to make the financial investment which move new ideas into the marketplace.

Unfortunately, for many years, government patent policies have, in all too many cases, acted as a barrier to such investment. The reasons for this can be traced to both Congressional actions and those of the Executive Branch. In recent years, however, both the Congress and the Executive Branch have taken action to remedy long-standing inadequacies in patent policy. The passage of the "Bayh-Dole" Act 35 U.S.C. Sec. 200, which grants small businesses and universities ownership to inventions made with Federal support, was a major breakthrough. In the opinion of many university administrators with whom we have talked, "Bayh-Dole" is already paying dividends. Additionally, President Reagan, last year, substantially revised the patent policies of the Executive Branch by issuing a new Memorandum and Statement of Government Patent Policy. This policy statement extends the principles of "Bayh-Dole" to performers other then small businesses and universities. Still, a number of statutes remain on the books hindering across-the-board application of the President's Statement.

Consequently, the Administration supports the intent of H.R. 5003. We believe H.R. 5003 establishes a sound basic policy, provides flexibility to cover unusual situations, and creates a sound institutional framework for the implementation and monitoring of the statute. It also makes a number of amendments to "Bayh-Dole" which experience during its implementation and operation have indicated should be made. We do have reservations about provisions of H.R. 5003 relating to transfer of rights under existing contracts and we will, of course, be happy to work with the subcommittee to cure this problem.

H.R. 5003 generally brings patent policy up-to-date. For many years government patent policy was dominated by the proposition that the government should normally own inventions made with its support. Though there were exceptions, particularly in the military agencies, this concept tended to shape the thinking of civilian agencies, and even some parts of the military R&D effort.

The origins of this concept can be found in a Report prepared by the Attorney General back in 1947. That report supports the concept of government ownership on the theory that permitting contractors to own inventions would increase concentration in American Industry. Thirty-five years of debate have not yet resolved whether ownership of patent rights leads to concentration of industries. More importantly, we should recognize that the older patent policies were framed in a now bygone era. In 1947 and for several decades thereafter government patent policy was being formulated against an economic background in which the United States was the world's technological leader.

But today, the picture is different. Three fundamental forces of change are having profound effects on the world economy and the importance of technology in international competition. These forces are:

(1) The technology explosion that has generated something like 90 percent of everything we know in the sciences in the last 30 years, and which will double our technical knowledge base again in the next ten or fifteen years.

(2) The increasing propensity of governments to promote their domestic high technology industries, and

(3) The emergence of the lesser developed countries as the makers, sellers, and exporters of manufactured goods, including increasingly sophisticated products.

One effect of these forces is that the United States really has two industrial bases. One is composed of our older more mature industries. The other is composed of our rapidly growing high technology industries. While older industries will not disappear, we must obviously establish government policies, including patent policies, that encourage older and new businesses based on new technologies. The general approach of H.R. 5003 will help both new and older industries.

How does government patent policy and H.R. 4003 fit into this picture? As noted earlier, the government is a major source of funding for research and development. Out of the billions that are spent by the government, it is obvious that many new ideas and inventions will emerge. But very few will be funded by the government to the stage where they can be readily brought into the commercial market. It will require private initiative, and much investment, to transfer these ideas from the laboratories to the market. Similarly, it will also take private engineering and marketing efforts to transform even more fully developed items, such as a state-of-the-art components for a military or space program, into a commercial item. Patent policy can either encourage or discourage this, depending on how it is structured.

H.R. 5003 will establish a more favorable policy to encourage commercialization of these inventions. It will normally allow the inventing organization the opportunity to retain ownership of the invention, thus allowing it to take advantage of the incentives of the patent system and the flexibility to dispose of resulting inventions in cooperative R&D arrangements with other organizations. At the same time, it provides the government with march-in rights which allow others to work the invention if the Contractor fails to do so.

We think an additional march-in right should be included that would give the government the ability to protect against retentions of title to patents where the retention has substantially anti-competitive effect. Although it is extremely important to put new technologies in the hands of the private sector to ensure that our economy will receive their full benefit, it is equally important to ensure that the retention of title does not work to harm or even destroy coompetition.

The wisdom of this approach becomes even more apparent when one examines the alternatives. The first would be the old policy of govenment ownership followed by licensing of all applicants. It is axiomatic that in most cases private enterprise will not invest in technologies it cannot control. This is not to say it will never happen. In rare cases the potential applications and size of market may be such that it would pay to invest even without an exclusive position. But, frankly, such clear opportunities are quite rare. It would be poor public policy to jeopardize the development of inventions and technologies because of situations that are rare.

It should also be recognized that a policy of government ownership, followed by licensing of all applicants, may be especially favorable to foreign competitors to the extent that they benefit from protection by their governments from competition at home. A secured home market may give foreign firms sufficient incentive to develop a U.S. funded technology even without exclusive rights. Products may then, in some cases, be exported back to the U.S.

The second traditional patent policy alternative has been to defer patent ownership determinations. This often has superficial appeal. It says wait for the invention to be made, and then have the government decide whether the government or the contractor should take title. The basic fallacy with this approach is that it assumes the government can actually make a valid determination based on objective criteria, as to whether exclusive, patent sector rights will be needed to encourage further development. In fact, perhaps the only way to do this would be to assign a horde of scientists, engineers, economists, and other specialists to research the problem, and you would need different specialists for different situations. And even then, there would be so many unknowns as to make the whole process more a matter of guesswork and politics than science. It is much more preferable, economical, and timely to start with the presumption of H.R. 5003 contractor ownership will maximize incentives. And, if, in fact, a potential competitor emerges that finds itself blocked by the contractor's patent, it can then go to the government and persuade it to use its march-in rights if the contractor is not working or allowing others to work the invention.

I have until now focused primarily on the impact of government patent policy on the technological vitality and growth of the overall economy. In developing a sound patent policy consideration should also be given to the following matters:

First, a sound patent policy should encourage the largest number and most qualified concerns to compete for Government R&D. This will help ensure that the government will get the most effective research for its money and lower government costs. A policy which normally allows contractors to retain ownership of inventions is most likely to foster such competition. In effect, what the government has been doing is paying a premium contract price reflecting its purchase of the technology to be developed under the contract. Because the government has rarely developed this technology into commercial products or resold it, the government has generally not recovered the extra purchase price. Under the approach of H.R. 5003, the government will let the contractor retain rights to technology and, therefore, should not need to pay the premium to buy the technology. Because a deferred determination will cause uncertainty, the government may not receive the benefit of a lower contract price.

Second, of course, the government should be able to make use of any inventions for its own internal needs on a royalty-free basis. H.R. 5003 provides that the government will receive a royalty-free license unless the agency waives its rights under certain circumstances. Thus, there is no meaningful difference between it and a deferred or title-in-the-Government policy on this count. Indeed, the government may use any invention, under the concept of eminent domain whether or not government supported, and under 28 U.S.C. 1498 need only pay "reasonable compensation" if the use is not under license to the government. The license provided to the government in H.R. 5003 would negate any requirement to pay royalties or "reasonable compensation" to the government for government funded inventions.

Last, it is important that government funded R&D performers have sufficient rights in resulting inventions to enable them to enter into collaborative R&D arrangements with other research performers. If they cannot make appropriate arrangements for disposition of resulting inventions, they could be foreclosed from participation in many desirable cooperative R&D ventures. Cooperative R&D ventures are starting up across the nation. H.R. 5003 clearly responds to these initiatives by enabling government funded performers to participate.

Thank you, I will be happy to respond to questions.

Mr. **WALGREN**. Thank you very much, Dr. Merrifield.

How should we view the patents that the Government now has in its inventory?

Dr. **MERRIFIELD**. Well, that's a good question.

Mr. **WALGREN**. Should they be transferred out, just in wholesale fashion?

Dr. **MERRIFIELD**. Unfortunately, most of those patents are not very valuable. They should not have ever been filed; they are defensive patents that are not necessary, and that's a different problem, but also many of them now are no longer relevant in the sense that new technology has superseded them.

I think that what we are trying to do, through the Center for Utilization of Federal Technology, is identify those that are relevant and license them. We've been having some success with that, and I suppose that's the best way to continue to try to handle those because they have to be screened very carefully and collected into business sectors that are relevant to somebody's business. It has to be a pro-active initiative.

It's an interesting thought that the possibility of exclusive grant back to the developers could still be made. I'm not sure just how successful that would be at this point.

Mr. WALGREN. Can you make any judgment of whether we are being successful in this area? The committee understands that there are some 28,000 patents owned by the Government, at least by present summaries, and that that number is the same number that was used in 1979. I suppose we must have developed some new patents in those intervening years; are they still there in addition to the 28,000? Is the 28,000 a good number?

Dr. MERRIFIELD. I think some of them are expiring as new ones are developed. I think the number is probably not too far off; I guess it's probably pretty much of a guesstimate more than it is an accurate count. You see, this has been going on for many, many years now, so that some of these are expiring as others are added on. The ones that are close to expiration are practically worthless, and probably should be abandoned at this point; that's generally the strategy in a company. You have a few patents that you really carefully nurture, but older ones are usually abandoned before their expiration, particularly if they are not particularly important.

Mr. WALGREN. As I understand the bill, the bill would create a Federal patent management arm in the Commerce Department. Now, this would be separate from the technology transfer efforts that presently exist, as I understand it, in each of the agencies. Is that a constructive thing? Does that create the potential of adding a level of bureaucracy to this decision to get the patent out? Would it be best left in those particular agencies that are, in fact, in communication with whoever is interested in the patent?

Dr. MERRIFIELD. That's a good question. I think it's more a leadership and initiative point of view, a catalytic agency role which I very much favor. Someone has to take initiative, and basically the Department of Commerce has done this in the past. We have a lot of background and experience in this. Our mechanism of action would involve, really, decentralizing this function into the laboratories where it could be most effectively administered, but we would exercise a teaching relationship, an internship, in which we would bring these people into our offices and teach them how to develop business plans, to do the screening, and to use the constraint analysis that separates good projects or good ideas from not-such-good ones. Also we would help them identify where the funding possibilities are through R&D limited partnership and other mechanisms, in order to increase the effectiveness of that process—at the decentralized level, though. I think it is important that this process be decentralized to those laboratories. Our agency would do that. Also, it would be a leadership role in identifying the Federal acquisition regulations that would implement whatever we're doing throughout all agencies so that it would be most effective.

Mr. WALGREN. This bill, as introduced, does not mention recoupment. Do you see a role for recoupment in this process, to the Government for, I gather—the question is, why does the Federal Government not have to share in licensing payments by third parties for patents developed under——

Dr. MERRIFIELD. Well, that's a good point; and again, we find that the royalties that we generate through licensing just about cover the costs of the administrative process of licensing. In fact, that's not the real benefit. This is one of the misunderstandings, I believe. There's an order of magnitude of greater return to the Government when something gets commercialized; new revenues occur, people get jobs and pay taxes, and you get ten times the return to the Government that you ever get out of a royalty stream, which is really relatively small.

And so the important thing, now, is to accelerate the process of commercialization and try to do anything that makes that process more effective and more rapid; and then the real return becomes a tenfold factor, a better return through new businesses and a greater wealth that is created in the process.

So I think there's nothing wrong with the Government having a royalty stream, but it's not the critical thing; it's not a very important factor, and if it impedes the process, it certainly would be destructive rather than constructive. The real benefit comes from the new businesses that are formed, and that's where we really need to focus our attention.

Mr. WALGREN. Has there been any specific pencil put to that effect, where the real benefit does come from the increased taxes of increased economic activity?

Dr. MERRIFIELD. Sure.

Mr. WALGREN. I understand it exists out there; is it possible for us to really weigh the balance?

Dr. MERRIFIELD. Sure. We can develop some numbers for you, if you like, and I'd be happy to do that.

Mr. WALGREN. I think that would be helpful because just from a taxpayer's standpoint, the taxpayer naturally resists conferring benefits without some benefit in return, directly appreciable benefit; and to the degree that we cause something to happen and then walk away from very concrete enrichment of individuals or individual organizations, we have to know that there really is a return benefit that is very real.

Dr. MERRIFIELD. Well, that's a good point and I'm not saying that it's necessarily undesirable to have a royalty stream. Our licensing efforts have actually done that; we're generating maybe $1 million a year or more in revenues, but that's not a great big number relative to the hundreds of millions of dollars that's committed to new R&D, and perhaps $1 billion downstream of new sales and revenues that would ultimately result.

So anyway, why don't we put together some thoughts for you on this and you can make your own judgment.

Mr. WALGREN. Going back to the question of the structure of the bureaucracy, do you see a duplication of what I understand to be the current process of coordinating patent policy through the Civilian Agency Acquisition Board and the Defense Agency Acquisition Council? If we were to go forward with this kind of a structure, is that not meaningful? The concern is whether section 201 would duplicate the current process of coordinating patent policy through the Civilian Agency Acquisition Board.

Mr. **Latker**. I think that your question is directed to the way the Federal acquisition regulations are being drafted now, which is a combined effort by the Defense acquisition group—I don't know their name, and the civilian group. The way H.R. 5003 is set up is that Commerce would, in consultation with the other agencies, draft regulations. That's not inconsistent with other areas of concern that are also plugged into the Federal acquisition regulations. In other words, there are other lead agencies, such as Labor who have the legislative lead in drafting the implementation clause for the Davis-Bacon Act. It is this clause that is put into the FAR but is really developed by Labor. The two Councils, obviously, will have just as much of an opportunity to look at the regulations that would be drafted by the agencies with Commerce as they would with any other lead agency contribution into those two bodies.

If anything, it would eliminate duplication because right now, in the patent area, for a number of years the regulations were done by committee. The way the regulations ultimately worked out was that the least common denominator of each agency's particular considerations were taken care of. Regulations and uniformity were being thrown out the window, basically, on the concept that one agency is used to doing one thing one way as opposed to another way, with no great evidence that these differences are necessary.

Mr. **Walgren**. The question is whether there might be reasons for the differences, depending on the different areas that these agencies are operating in.

Mr. **Latker**. Well, the FAR, part 27 of FAR—there was a great deal of public comment on those regulations, and also the predecessor regulations that were drafted for Public Law 96-517. The public comments were very consistent as to what should be done. The inconsistency showed up in how the different agencies wanted to interpret the input from the public comments. Given the fact that you were dealing in a committee-type scenario as opposed to having any end determiner decide what the public comments said, you didn't really have a reflection of what the public had input into the FAR.

Ultimately, this last go-around in part 27 required that—they were so complicated and they were so unreflective of the public comments that the Vice President had to withdraw them, at which point Congress did get involved and, through some very difficult negotiations, we ultimately came up with a part 27 that was more reflective of the public comments.

Mr. **Walgren**. All right. Let me ask you, Dr. Merrifield—and I know that your time is short—do you have any views on the Government patents generated by the Government-operated laboratories where we have one prime contractor, as I understand it, that is involved in administering a very major, major amount of Federal funds? Would that prime contractor, by definition, acquire all the patents generated in that process, or are they in a different circumstance?

Dr. **Merrifield**. Well, I think that that's an organizational problem. The laboratories that develop the technology should probably sublicense that technology for commercial purposes.

Even though the contractor might be able or willing or interested in commercializing some technology that would be available to them, they would not have to take license to it; or they could take license to it, and then develop it in a consortium with other companies. This is exactly what's happened to the universities. When the universities got access to the technology through the Bayh-Dole bill, what they've done is collaborate with industry in very extensive ways, now, to help them develop that technology.

I think it's basically an incentivizing process. That's really what happens. When you allow technology to be granted back in exclusive fashion, there are some creative opportunities that develop, initiatives get generated, and things begin to happen; and it's a very, very positive thing.

There's no such thing as zero risk, either, and it's the lesser of evils in a sense, but what we're presently doing is hopelessly ineffective.

Mr. **Walgren**. But would you recommend any different treatment of these major, major contractors that run a lab like Oak Ridge or something like that where, as I understand it, they are really in place of Government, and in that sense, maybe that prime contractor shouldn't be the one to receive the patent rights to the degree that they are really the Government running Oak Ridge Laboratory and, as I understand it, you could make that analogy?

Dr. **Merrifield**. Yes.

Mr. **Walgren**. Then that private contractor is really in the same position as other contractors with the Government, and wouldn't we want to treat them differently?

Dr. **Merrifield**. That could very well be; and, in fact, to the degree that that work was generated by contract outside, by other people, the opportunity for those subcontractors to acquire the technology certainly would be useful. To the degree that it's developed at, say, the Oak Ridge Laboratory itself, it might fall under a different set of rules which would allow the individual inventors to have incentives for acquiring rights and trying to commercialize the technology.

Mr. **Walgren**. I realize you have a commitment. I wanted to give Mr. Brown an opportunity to discuss anything with Dr. Merrifield; and I apologize, Mr. Brown, we got a late start and Dr. Merrifield has to go.

Mr. **Brown**. I apologize for being late, Dr. Merrifield. I'd like to pick on you a little, but I'll pass right now.

Mr. **Latker**. Could I add to your question? I think the way the bill is drafted there is some provision for different treatment for those kind of groups, but the way we understand the bill is that the Oak Ridge contractor would, in most instances—but possibly with additional controls—be manager of the results of the technology, which is consistent with the Commerce philosophy that you have to decentralize the management of the technology to the point closest to the origin of the technology; otherwise, you just don't get the best kind of results.

Mr. **Walgren**. Let me ask about march-in rights. Have we ever marched in anywhere, other than militarily?

Dr. **Merrifield**. Not that I know of. Of course, during World War II there were some march-in rights exercised in polystyrene and so forth, but as far as I know, there haven't been any since then of any significance.

Mr. **Walgren**. Would that suggest, then, that if we want to pursue that concept that it would make sense to set out, instead of march-in rights, limited time opportunities to take advantage of something and if steps are not taken within that definite time period, everyone knows that the right is terminated?

Mr. **Latker**. Could I add to that? There are not many cases in which the Government actually exercises the march-in. There are any number of cases in which the contractor, having title and then asked what he was doing about it, indicated nothing; and to the extent that the Government wanted the rights, there was a turning-back. In other words, there was no positive necessity to march in, merely the conversation between the contractor and the Government resulting in the turning-back of the invention to the Government on the basis that the contractor did not feel that he wanted to pursue it any longer.

So there are cases that are turned back.

Mr. **Walgren**. Well, the march-in kind of gives you that potential at all times as opposed to setting it out there for 2 years and then going back and looking at it.

Dr. **Merrifield**. If there's no evidence of any effort or any plans to commercialize, there could be a time limit that might be set. I think that's not unrealistic. I think there need to be incentives to do that. Again, we waste the technology if we don't expedite its commercial development. Its life cycle will not be very long any longer, and so it is important to do that. That might be a useful thought.

Mr. **Walgren**. Can I ask you just if you can make a kind of a comparison as to the degree of importance in these factors? If we now have 28,000 patents and we had 28,000 in 1979, apparently there's sort of a wash going on there, and the patents are going out about as fast as they're coming in, so apparently we're doing pretty well on the transfer side at that point. Your other benefit that you see is the interest of the contractor in coming in and bidding and getting involved, and then creating new things as they go along, which otherwise would not happen.

Can you, on a scale, say which of these is really more important in your view?

Dr. **Merrifield**. Well, Mr. Chairman, the 28,000 patents that currently exist have minimal value now; partly because they're old and out of date, partly because many of them are defensive patents that shouldn't have ever been patented or registered in the beginning. So the wash that you're talking about is really the ones that are expiring versus the new ones that are being added, rather than the licensing function which is not that active a program. It's a very minimal program with very limited resources.

So I think the key thing, then, is to incentivize people to develop new technology. If I'm a scientist in a laboratory under contract to the Government and I come up with a new idea that has relevance to the mission that I'm doing the work for, but also I can see a commercial potential over here, then I'm going to see it right there at the beginning and I'm going to try to allocate some resources and effort to develop it for the commercial potential, as well. So you multiply the total amount of R&D that gets done and telescope the time to commercialization, and increase the results of that technology. If you wait until the contract is finished and you warehouse that technology and some administrative group here in Washington looks at it and says, "Well, maybe we ought to patent that," nothing ever happens. And basically, that's why that process is so ineffective. It's just hopelessly bureaucratic. The people that are doing the work don't really understand the commercial potential, often, and that's why we miss the opportunities. Also, that's why that incentive has to be there right from the very beginning.

Mr. WALGREN. Well, thank you very, very much. We appreciate your having come, and I apologize for being late at the start.

Dr. MERRIFIELD. Thank you, Mr. Chairman.

Mr. WALGREN. We'll look forward to talking to you about that, and I understand—is it Mr. Latker—that can stay and continue the discussion with us?

Dr. MERRIFIELD. Yes, indeed.

Mr. WALGREN. All right. We'd appreciate that.

Maybe I could continue to address some questions to Mr. Latker from Commerce, and then we'll turn to the other witnesses.

When the Government has a monopoly on a business, like uranium enrichment and nuclear fuel reprocessing, why shouldn't the Government retain those patents? Would there be another area there where we should try to treat this a little differently, on a wide range?

Mr. LATKER. It was our hope that the exceptional circumstance provision of the bill would provide people, like DOE, especially in the nuclear enrichment area, to be able to take out from the general rule areas, like nuclear enrichment, and basically control them as they saw fit. And in fact, under that exceptional circumstance provision, we would expect that DOE would want to possibly add some conditions to contractors like Oak Ridge that they feel are necessary over and above the conditions that are already in the bill. And Commerce has no objection.

Mr. WALGREN. But you would foresee, just looking at the Government as a whole, the need to really exercise that special——

Mr. LATKER. Well, we would hope that the legislative history will reflect the areas that Congress is concerned with, and I know that the DOE people are in fact—in discussions with them—attempting to identify the areas that they are most interested in that might be subject matter that would be handled under the exceptional circumstance provisions.

But I think that if Commerce had a preference, we would like that kind of area identified in the legislative history to the extent that you can, and, we don't think that there's that many areas that you couldn't be pretty specific.

Mr. WALGREN. I guess this is relatively clear when I think about it, but it raised a question in my mind when I first read it. The bill provides that the Government would retain a nonexclusive, nontransferable, irrevocable, paid-up license to use the subject invention throughout the world on behalf of the Government.

Now, the question I would have would be, when we say that's nontransferable, that would not preclude the Government from turning to another agent in the private sector and saying, "Would you please manufacture this?"

Mr. **Latker**. No, not at all.

Mr. **Walgren**. And supply it to us for our use?

Mr. **Latker**. First, I would say that I think that that language is sort of like state-of-the-art language that has been used in Government contracts for a number of years. It's the "by or on behalf of" part of the language that permits the Government to purchase from whomever they see fit under their license, whether it's the patent holder or not. The nontransferable—my recollection is that that is to indicate that the Government can't turn that same right over to, say, the Government of Germany or England, so that they can also purchase under that license from whomever they saw fit, avoiding the patent rights.

Mr. **Walgren**. Is it your impression that that right would ever be waivable? As I understand it the Government retains certain basic rights; and yet, there is a provision for waiver in this act——

Mr. **Latker**. Yes.

Mr. **Walgren** [continuing]. And would that be something that is waivable at all?

Mr. **Latker**. Yes. Under the act, the way the act is written, it is, and——

Mr. **Walgren**. Does that make sense?

Mr. **Latker**. There are a number of cases that have been brought to our attention in which the entire—first, I'd say the waiver is not one in which—or at least, the bill appears to not make it one that can be done without documentation and concern on the part of the agency—but there are clearly inventions that arise out of the Government system in which the sole market is the Federal Government, and the Federal Government is not interested in further development, bringing it into the marketplace. And also, there are cases where there is cost sharing on the part of the contractor, so to the extent that—I presume that the waiver provisions are not intended to be used willy-nilly, but are intended to provide in unique situations the ability of the Government to look at the conditions that are attached by the bill to determine whether they actually create a problem in a specific case and determine whether they want to make a waiver or not.

And in the license situation, we've already seen cases in which the entire marketplace for the invention is the Government market, and the Government's not going to develop. So the Government's license, then, is tantamount to taking title in the invention and basically defusing the entire incentive intended by the bill. So if you actually wanted the invention ultimately delivered through private risk capital, then it does make some sense to waive the license. But of course, we're not suggesting that it should be done on anything other than a very unique situation.

Mr. **Walgren**. It sets up a circumstance, though, where there's a tremendous interest in that waiver, and you have set forces in motion that——

Mr. **Latker**. Each case would have to be looked at on its own, but to the extent that an invention was made with Government support that had no Government market at all, then it doesn't make any sense to make a waiver or, if the potential market is merely a small part of the commercial market, it makes no sense to waive the license. We're hoping that the agencies can use their best judgment in determining when it's appropriate to make a waiver; but under any circumstances, it's not intended to be one that's used in other than rare situations.

Mr. WALGREN. Mr. Brown, would you like to ask any questions?

Mr. BROWN. No, I have nothing.

Mr. WALGREN. Well, we appreciate your coming on the part of the Department. Please stay; perhaps there will be something you would like to add to these discussions as we go along.

The next witness is Roger Ditzel, director of the patent office at the University of California at Berkeley. We welcome you to the committee, Mr. Ditzel, and appreciate you coming and sharing your views with us. As we usually say at the outset of these hearings, written remarks will be made part of the record automatically, and we want to encourage you to make the points that you feel most important orally in whatever way you feel you can make them most effectively.

You may proceed.

STATEMENT OF ROGER DITZEL, DIRECTOR, PATENT OFFICE, UNIVERSITY OF CALIFORNIA

Mr. DITZEL. Thank you, Mr. Chairman. It's a privilege to be here.

For the past 13 years I have been directly involved in the management and licensing of university inventions funded by the Federal Government and others. My responsibility involves day-to-day implementation of the subject matter controlled by the legislation that you are considering today.

My responsibilities encompass the whole University of California system, so we have a rather large patent licensing operations for a university.

I support this legislation, Mr. Chairman, as it applies to the universities, and also as it applies to for-profit business entities. I would like, for the record, to indicate the support also and endorsement of my testimony by the Council on Government Relations and the Society of University Patent Administrators.

In considering H.R. 5003 and related legislation, I think it's important for us to remember—and awfully easy for us to forget—the importance of the individual inventor. That's the person from whom the new ideas come, and new ideas are very, very fragile things and it's a long way to the market. That idea, for proper development and testing, must be nourished. The inventor, regardless of the nature of his or her employer, must be encouraged to develop that idea, or it will die before it can ever be tested.

To have a truly effective innovative process we must keep that inventor interested, and the most effective way to do that is to leave, in my opinion, patent rights with the inventor's employer so that the inventor is still there, can still see what is happening in the whole process, at least in those very early stages. And that certainly is the objective of this legislation, which strengthens the innovative process in the United States.

My written testimony speaks more to that point.

Public Law 96-517 has demonstrated this case in universities and small businesses, and if this present legislation is enacted it would demonstrate the same with respect to large business contractors receiving Federal funds for research and development.

So we do support title going to a large business contractor for the reason that it's just good national policy.

The remainder of my oral comments relate to improvements and changes proposed with respect to 96-517 as contained in section 402(15) of this legislation, H.R. 5003.

It is here, of course, where I work with this legislation every day, and my comments go to what I see from my experience as being practical, workable, and effective.

First, with respect to invention reporting requirements as set forth in (15)(e), the language here would codify the current OMB Circular A-124 language. It's a practical way of dealing with a very complex issue. Others have proposed reporting any invention conceived, upon its conception; for a variety of reasons I consider that to be an impractical approach. One cannot know when one has had conception until one has had reduction of practice, which may occur much later. This has nothing to do with publication or reporting of research results in the literature on things that are not patentable.

Also in section (15), the current legislation would be changed to allow university operators of Government-owned, contractor-operated research and production facilities the right of patent title retention now provided in 96-517 for other funding agreements. The University of California is the contractor for Los Alamos National Laboratory, Lawrence Livermore National Laboratory, and Lawrence Berkeley National Laboratory.

Mr. Chairman and members of the committee, I assure you we have no interest in title to weapons inventions; we normally wouldn't even see them in my office. I believe the legislation, as drafted, properly protects the Government, which would retain title to those inventions. If it does not do so now, the language as Mr. Latker suggested certainly should be changed to reflect that.

My next point goes to a rather technical one with respect to a current limitation in 96-517, a limitation on our ability to license inventions arising in universities to large businesses. Currently we can only license for a period of time 5 years from commercial sale, or 8 years from date of the license agreement. That is too short a time, and consistent with title III of this legislation, I believe it is appropriate to eliminate that limitation, particularly where Federal approvals are required. Many, many millions of dollars and many years of effort are required to get a new product onto the market, and anything we can do to encourage that risk capital to be invested in those new products is, I think, consistent with the national interests.

There is also in this legislation something about sexually propagated plants being added as inventions. The patent laws have plant patents which are asexually propagated, and this would add the sexually propagated inventions to the provisions of 96-517. I don't think we need to dwell on that any more.

There is one thing that has come to our attention as a matter of practice with Public Law 96-517, and that relates to Federal employee inventions where the Federal employee is working within or associated with a university and in fact has a nonsalaried appointment in the university. For example, a Veterans' Administration employee normally is under an obligation to assign patent rights to the Federal Government under Executive Order 10096. Those Veterans' Administration hospitals are set up in conjunction with and in cooperation with leading medical schools. Very often the VA employee receives a grant from DHHS to support a particular piece of work through the university. Under Public Law 96-517, the university has the right to retain title, but Executive Order 10096 says the title by that inventor must be assigned to the Federal Government. It's an inconsistency that I believe would be desirable to change, or to clarify it by inserting some language in section 202(E) of 96-517; one can make it clear that the Federal employee's invention can be waived to the university if that is not already covered by the waiver language you referred to earlier, Mr. Chairman, in one of your questions.

One other minor thing in 96-517 that this legislation perhaps should include goes to the question of training grants. We have seen this where the agency treatment of inventions arising under fellowships, scholarships, and so forth—where that funding goes to the university—the graduate student is in fact doing research; yet the language for funding agreements in 96-517 is not interpreted as covering those educational grants. I would encourage the subcommittee to examine that language. I have suggested some changes in my written testimony.

Mr. Chairman, it's a privilege to appear here before this subcommittee. I thank you for the time you have given me. I am prepared to answer questions or work with your staff at your pleasure.

[The prepared statement of Mr. Ditzel follows:]

STATEMENT OF

ROGER G. DITZEL

BEFORE THE

SUBCOMMITTEE ON SCIENCE, RESEARCH AND TECHNOLOGY

HOUSE OF REPRESENTATIVES

ON H.R. 5003

MAY 15, 1984

Mr. Chairman and members of the House Subcomittee on Science, Research and Technology:

My name is Roger G. Ditzel. I am Director of the Patent, Trademark, and Copyright Office of the University of California. I am privileged to be here to testify in favor of House Resolution 5003, the "Uniform Science and Technology Research and Development Utilization Act."

My comments also reflect the position of the Council on Governmental Relations, and the Society of University Patent Administrators. Both of these organizations strongly support this legislation. Further, I know of no university which opposes H.R. 5003.

For the past thirteen years, I have been directly involved in the management and licensing of university inventions funded by the federal government and others. I can assure you that where a university has title to a patent based on the research of its employees, there is a strong desire to find an industrial licensee who will commit substantial risk capital to the development of the invention. When such a situation occurs, everyone benefits. The public has available to it new products which often solve critical needs. The federal agency benefits, in that the results of basic research are used in a practical way. The industrial licensee develops a successful business and pays income taxes on the profits from that business. The university benefits, since royalty payments returned by the licensee to the university can be used for the support of research and education.

Public Law 96-517, the landmark legislation passed in 1980, has proven very effective in reducing the previous uncertainties and administrative burdens resulting from the disparate policies of many federal agencies prior to that time with respect to the disposition of patent rights arising under agency funding. We believe the amendments proposed in this legislation to P.L. 96-517 will strengthen that bill and make it even more effective.Specific comments on those changes are discussed later.

While Public Law 96-517 limited the right of retention of federally funded inventions to nonprofits and small businesses, this legislation would permit large business contractors and grantees to retain patent rights to inventions arising under federally funded research and development. I believe this is sound national policy. It will spur innovation resulting from federally funded efforts by the contactor, who is (or should be) most interested in and capable of developing the innovation into a marketable product. It will, in my opinion, eliminate the reservations many large companies have had concerning accepting federal funding for research, due to the threat of loss of their own previously established proprietary position. For example, this legislation would remove the threat of loss to the company of background patent rights, except under extenuating circumstances.

Further, the legislation includes suitable protections for the public by assuring that diligent development of any patented invention will take place, to the extent practicable, or the contactor will be required to return title to the patent to the federal government. As a result of the enactment of this legislation, I would anticipate that increasing numbers of leading United States companies would be willing to accept funding from the federal government in areas in which they are uniquely qualified in applied research and development activities.

A number of the provisions of Section 402 of H.R. 5003 relate directly to universities, in that they amend parts of P.L. 96-517, and bring other laws into conformity with it. I support each of the proposed modifications to P.L. 96-517, but will comment on only a few of those in Section 402(15):

1. The addition of sexually propagated plants to the definition of "invention" in P.L. 96-517 is an appropriate expansion of the definition of the term "invention." Employees

at a number of universities breed plants, and the changes proposed would make it clear that these new varieties have come under that law. I would suggest only that the language in (15)(B) be modified by adding the words "sexually propagated" prior to the first occurrence of the word "variety" in that section.

2. Section (15)(C) significantly modifies portions of the P.L. 96-517 language providing for exceptions to retention of title by a university or small business that is the operator of a government-owned, contractor-operated research or production facility. Several universities are such operators, including the University of California, which operates the Los Alamos National Laboratory, the Lawrence Livermore National Laboratory, and the Lawrence Berkeley Laboratory. We have seen a number of inventions arise in those laboratories which can, in our opinion, be better licensed by us than through the federal agency funding the laboratory. At the present time, with the laboratories mentioned, we must go through an extensive waiver-request procedure to obtain title to such non-weapons inventions. Our experience is that between twelve and twenty-four months elapse before such a waiver is approved by the funding agency. In several cases, that delay has caused us to lose potential licensees who were ready to invest in the innovative development, but which lost interest due to the waiver delays. Certainly the University of California, and no other contractor, has any desire

to have rights to patents on weapons waived to it. It is our understanding that the provisions contained in the proposed language would prevent such title to lie in the operator. It should be noted that different agencies take different views at the present time of allowing the provisions of 96-517 to apply to inventions arising in government-owned, contractor-operated facilities. This inconsistency in federal policy would be eliminated by this Bill. Further, the language in this section parallels that provided in Title III, allocating rights to large business contractors.

3. The Secretary of Commerce is, in our opinion, the best office within the Administration for helping to balance agency actions against the intent of Congress with respect to exceptions made by an agency head with respect to the implementation of Public Law 96-517.

4. The language proposed in (15)(E) conforms to the current regulations (OMB Circular A-124) with respect to invention reporting and election of title by the contractor. This system is practical and has worked well. Some suggest that inventions be disclosed immediately upon conception and before reduction to practice. In my opinion, such reporting is unworkable and impractical, at least in the university environment. Further, it

should be noted that the conception of a patentable invention can only be defined once the invention has been reduced to practice. Thus, the reporting of a conception at the idea stage that may never work or has been untested would, in my opinion, only lead to the generation of paperwork to no avail. Thus, I strongly support the language proposed by Section (15)(E) of this Bill, and the parallel provision in Title III.

5. Under (15)(F), I believe the correct citation would be Section 202(C)(4), rather than paragraph (c)(4).

6. I support the language of (15)(I) allowing an agency at any time to waive all or any part of the rights of the United States to subject inventions made under a funding agreement, subject to the safeguards listed. We have observed many situations where, due to other regulations, an agency finds it difficult to waive rights to us, even though the equities would appear to favor such a waiver. For example, a full-time federal employee working in a university and receiving research funds through the university from an agency other than his or her employer, is currently under an obligation to assign title to the federal government under Executive Order 10096. Such situations occur with employees of the Veterans Administration who also have non-salaried university appointments and with employees of the

United States Department of Agriculture who have similar university appointments. Often such employees are co-inventors with full-time universities employees, but not always. The language of this Section would encourage agencies to waive those rights to the university.

7. (15)(H) would delete from P.L. 96-517 some unnecessary restrictions on the assignment of rights by a university to another. More importantly, it would eliminate the unnecessary limitations of exclusive licenses to large companies currently in the language of P.L. 96-517. Given the provisions of waiving exclusive life-of-patent rights to large business contractors of Title III of this legislation, the modification of P.L. 96-517 as provided here is entirely appropriate. Deletion of exclusive licensing periods would encourage greater risk capital investment by large companies in university-derived inventions.

One further item I would suggest for consideration by the Committee in H.R. 5003 deals with the definition of "funding agreement" in Section 201(B) of P.L. 96-517. A number of agencies make available scholarships, fellowships, and training grants to educational institutions or their students. Different agencies have treated inventions arising under such educational support in different ways. DHHS, for example, requires the invention to be passed to DHHS, but has a liberal waiver policy back to the university. The National Science Foundation, as I understand it, makes no claim to inventions arising under such educational awards. It would seem that an appropriate policy would be that inventions arising under such educational awards should be treated as any other invention arising under a funding agreement as defined by P.L. 96-517. I would ask the Committee to consider inserting the words, "scholarship, fellowship, training grant" after the first occurrence of the word "grant" in Section 201(B) of 96-517. Further, I would suggest the word "educational" be inserted after the two occurrences of the word "developmental" in that same section.

It has been a privilege and a pleasure to submit this testimony in favor of H.R. 5003. I am prepared to answer any questions you may have, and to work with you and your staff in any appropriate way in support of this very important legislation.

Thank you, Mr. Chairman, for the opportunity to present my views.

BIOGRAPHICAL SKETCH

ROGER G. DITZEL

Roger Ditzel received his BS degree in Chemistry from Iowa State University in 1951. After teaching in the U.S. Army Chemical School, he joined Monsanto Company, where he held positions in research, marketing, technical service and federal government liaison. From 1964 to 1971, he was Manager, International Business Development, responsible for structuring foreign investments and technology transfer.

From 1971 to 1978, he was at Iowa State University, holding concurrent positions as Assistant to the Vice President for Research (research administration), and Associate Director of the Research Foundation (patents and patent licensing).

In October, 1978, Mr. Ditzel joined the University of California Systemwide Administration staff. As Director of the University's Patent, Trademark and Copyright Office, he is responsible for all patent prosecution and licensing matters arising at the nine University of California campuses, which have a combined research budget of over $700 million.

Mr. Ditzel is a Registered Patent Agent, Immediate Past President of the Society of University Patent Administrators, a member of the Board of Managers of the Council on Governmental Relations, and a former trustee and officer of the Licensing Executives Society.

Mr. **Walgren**. Thank you, Mr. Ditzel, very much. I appreciate that.

Let me just ask at the outset, in general, are we really talking about something of critical importance in this area in terms of numbers and values? This isn't the most politically interesting subject for most people, and yet we want to do the right thing in this area. At the University of California, do you routinely ask for the patent rights of all the inventions that are made in relationship to your work with the Government? And if so, how many of these inventions are financially significant and commercially interesting to you?

Mr. **Ditzel**. Well, Mr. Chairman, we receive somewhere around $500 million in research funding from the Federal Government in health training and hospitals and so forth, every year. We had, this last year, about 300 inventions reported to us. One can categorize those as one-third probably unpatentable or old ideas; a third that really look good and have the prospect for developing into a viable commercial product. We spend money on those, and very often do that as a high-risk investment, not knowing whether that invention in fact will get to the marketplace, but we spend that money knowing that if we have that patent, the chance of getting a commercial company to invest money in developing that product goes up at least by an order of magnitude.

The other third of the inventions fall somewhere in between those. It's not an exact science; it's very much an art. I am very encouraged by the whole process because I see it from start to finish. But I know how fragile it is. Anything that we can do to make that process less fragile is, in my opinion, highly desirable.

Once we have a product on the market—there's a company making it, and if that company is successful, wildly successful as some would say, they pay 40 or 50 percent of their net profit in taxes anyway. Where are we losing by leaving rights with those contractors or with those companies? I think that the public benefits in many, many ways, and I will say that having their patent rights, just a piece of paper, is not the way to innovate the products. It's one factor and one factor only. And when the company that is doing the innovation has the inventor close by or as a consultant, and that individual inventor is enthusiastic, the chances are increased of that product getting to the market. If the inventor doesn't believe in it, then it will never get there; and he can be so easily discouraged as to give up.

Mr. Latker might wish to add something to that.

Mr. **Latker**. I agree with Mr. Ditzel's indication of the importance of ownership in the universities. There's another factor that is beginning to emerge from practice under 96-517 that people haven't paid as much attention to as identified inventions, and that is the ability of the university to assign future invention rights in a collaborative relation type of situation. We have seen an increase of collaboration across the entire Nation between industry and universities that in part appears to be based on the fact that the university can enter into a collaborative relation with an industry concern who is interested in technology at the university, even prior to the making of an invention. That's the first question that an industry person will ask when they get into collaboration, is how do we dispose of these rights. The university being able to make a disposal can negotiate it at that point in time. In fact, one of the major benefits of H.R. 5003 from our point of view is the fact that what we have already done for the universities under 96-517 we will be doing for all other Federal contractors in a way in which they can also collaborate by disposing of the future invention right in a collaborative relationship.

Right now, there is an identified number of State innovation centers that are growing up across the Nation. At this point in time, a Federal contractor who does not have the right to dispose of the future invention right cannot participate in innovation centers to the extent that the other participants want an assurance as to how rights are going to be disposed of or inventions are going to be disposed of after they are identified; in other words, after the research has been done.

So, without the benefit of something like H.R. 5003, there is a great portion of the R&D funding that the Federal Government is doing that is closed off from collaborative projects on the basis of the inability of the contractor to enter into an arrangement that disposes of future rights.

I would also add that that same problem is prevalent as it relates to Federal employees, and I think Mr. Ditzel spoke to that. There is a provision in the act that permits the agencies that, in a collaborative arrangement that involves an employee, such as VA and the University of California, the agency would be permitted prior to the identification of invention to dispose of rights between themselves without any further involvement from Washington. And that's a very significant theory.

Mr. **Walgren**. The Chair would recognize Mr. Brown.

Mr. **Brown**. Mr. Ditzel, this is perhaps a little outside the scope of the legislation, but you made reference to the addition of sexually propagated plants to the definition. I wonder if you have any thoughts about the patentability of living forms that arises from our DNA research? And I suspect that even if there is action that might be required of the Congress, that this bill is not necessarily the place to put it; but I recall that when the Supreme Court ruled on this matter a few years back, they suggested Congress would need to make some changes in the law, and I'm wondering whether or not the time may be right to do that. In the case of plants, we have existing law that provides for the protection of asexually propagated plants, and it is appropriate to broaden that, I presume; but in your experience, do we need to move further than that in connection with the revision of patent law to other life forms?

Mr. **Ditzel**. Well, Mr. Brown, I am elated to have you ask that question. I don't have a yes or no answer for you. In my personal experience at the University of California, which you are very familiar with, I have not seen any major problem with patent laws with respect to life forms. What the Supreme Court said, as I understand it, is that just because something is living it is not unpatentable.

Mr. **Brown**. There may be a problem of defining when it is living.

Mr. **Ditzel**. That could well be. We could get down to viruses and protein sequences in that discussion. Technology is moving very,

very rapidly in that area, Mr. Brown. If I do see an area where I do have some concern about that, I would be pleased to let you know, but as yet I have not seen an area of concern with respect to the patent laws and the types of things that I do.

Mr. **Brown**. Well, that is somewhat reassuring. It does appear that many of the fears that we originally had in the whole area of biotechnology have not materialized, or have not materialized as rapidly as we might have expected. We do need to continue to be alert to the possibilities.

Just one additional point. You speak in favorable terms generally of the need for this legislation. I wonder if you could give us one or two specific examples of how the university has been benefited or any changes in the utilization of patent rights as a result of the legislation that we passed earlier that you referred to. You do indicate that it made it somewhat easier for you to operate. In specific terms, has there been additional benefit that we could quantify in some fashion that would allow us to evaluate the prospects in passing this legislation?

Mr. **Ditzel**. Well, Mr. Brown, 96-517 certainly reduced the uncertainties in the staffing time required to figure out what rights we did and did not have. That bill is working and working well. I have suggested a couple of things here which I think would improve it. Our disclosure rate has gone up 25 percent since this bill was passed—excuse me, since 96-517 was passed—but I can't blame it all on 96-517 because there are many, many factors at work. Just publicity about innovation in Federal patent policy being considered. Our income, relative income, has been going up, so we're paying more inventor shares; and that causes the inventors themselves within the university community to talk to their colleagues and good mouth us rather than bad mouth us. The whole attitude toward patents and industry in the university community has turned 180 degrees in the last 5 to 10 years based on my experience. That doesn't mean that it's all unanimous that way; no university community is ever unanimous on anything. But the general faculty view of industry has turned around, and our industrial funding—where patent rights become so very, very important—was absolutely helped by 96-517. Companies now will fund research knowing there is a certain law, not an uncertain agency policy.

Mr. **Brown**. Do you have something in the way of an annual report of your office or other document that would give us some specifics as to how your utilization of patents has increased or your income from patents? And we won't blame it all on the passage of the Act, but if we want, we might assume there was some connection.

Mr. **Ditzel**. Mr. Brown, I have a one-page summary here which gives 11 years of history from 1973 through 1983. The figures do require some interpretation at times, and I'd be happy to work with the staff to tell the types of things that are going on.

Mr. **Brown**. Mr. Chairman, if there's no objection could we have that included in the record after consultation with the staff?

Mr. **Walgren**. Without objection.

[The information follows:]

UNIVERSITY OF CALIFORNIA

PATENT ACTIVITY

	Year Ending June 30											
	1973	*1974*	*1975*	*1976*	*1977*	*1978*	*1979*	*1980*	*1981*	*1982*	*1983*	*1984*
Inventions Reported	*170*	*217*	*156*	*153*	*188*	*134*	*156*	*235*	*234*	*272*	*297*	
U.S. Patents Issued	*16*	*32*	*17*	*26*	*26*	*31*	*29*	*27*	*41*	*45*	*39*	
U.S. Applications Filed	*47*	*26*	*35*	*39*	*29*	*41*	*60*	*76*	*95*	*67*	*92*	
U.S. Applications Authorized for Filing	*15*	*13*	*16*	*24*	*19*	*30*	*51*	*79*	*97*	*87*	*124*	
Foreign Applications Filed	*44*	*29*	*69*	*26*	*20*	*56*	*48*	*95*	*199*	*88*	*334*	
Total Applications Filed	*91*	*55*	*104*	*64*	*49*	*97*	*108*	*171*	*294*	*155*	*426*	
Options In Effect	*9*	*10*	*11*	*16*	*14*	*14*	*27*	*14*	*12*	*15*	*35*	
Licenses Issued	*15*	*14*	*9*	*13*	*8*	*21*	*12*	*101*	*63*	*51*	*42*	
License Agreements In Effect	*92*	*102*	*101*	*103*	*109*	*123*	*129*	*226*	*254*	*301**	*312*	
Income-Producing Properties	*48*	*47*	*41*	*57*	*53*	*59*	*65*	*84*	*87*	*83*	*109*	
Gross Royalty Income ($000)	*240*	*396*	*619*	*637*	*755*	*581*	*737*	*1,275*	*1,253*	*1,731*	*2,266*	

Mr. **Brown**. And may I bring up one additional question. Many years ago, when I first came back here, I had an interest in the patent right of employed inventors, of which you have many, probably, at the university. There was some feeling then that equity and enhanced productivity and so on might possibly merit an examination of whether or not employed inventors were receiving the full fruits of their work where they made inventions in their role as the employees—in most cases of corporations, but I presume it might apply to universities, too. In your best thinking, is there currently a serious problem in this or is it something that has been reasonably worked out with the various parties involved, at least in the university setting?

Mr. **Ditzel**. Mr. Brown, it certainly has been worked out in the university setting. Universities have traditionally paid inventors' shares because normally our faculty are not employed to invent; and there's been a tradition of that in the University of California for at least 40 years.

With respect to the industrial sector, I have some mixed emotions about that proposal. I see some good in it and I see some problems in it. I don't feel it's a burning issue in my own sphere.

Mr. **Latker**. May I add something to that? Public Law 96-517 requires royalty sharing between the university and its inventors. It doesn't speak to the small business element.

At this point, the body of inventors that—there's a presumption that, in a profitmaking sector, that someone who is interested in delivering the best goods to the public and making a profit is going to take care of their inventors. In the nonprofit sector you can't make that kind of presumption. I think that's the reason that there was special treatment for the university inventors in Public Law 96-517. The body of inventors that we see at Commerce that are being neglected are the Federal employees that occupy this same kind of position as the university inventors did prior to the passage of Public Law 96-517 in that there is virtually no guarantee of any kind of return for being part of the innovation process in the Federal employee scenario, and we're looking at that very carefully right now.

Mr. **Brown**. By looking at it, do you mean you may be working up to propose some legislation?

Mr. **Latker**. We have already, in the Stevenson-Wydler Report that we have submitted to the committee, you will find in the recommendations an indication that we believe that—that we are looking to recommend a system of royalty sharing with employees, Federal employees.

Mr. **Brown**. I think that recommendation would be received very favorably.

I have no further questions.

Mr. **Mineta**. Doctor, just let me ask—I understand you described the protections that are there for the public as suitable from the point of view of the contractor. How do you see the march-in provisions working?

Mr. **Ditzel**. Well, the march-in provisions—there was one request, I think, to the National Science Foundation for a march-in, in another—not directly march-in, but concern about extension of this period in DHHS—and those are the only two that I know of.

March-ins for universities are not a problem, because what we're trying to do is find somebody to license, to put the product on the market and invest the risk capital. Universities don't have the capability of manufacturing and marketing products as would a large contractor. If the Federal Government says to us, "We want to march-in because you haven't done anything," we can say, "Show us somebody that's interested; we'll license them. We've been looking for someone like that." So the march-in problem really is not a problem with the university sector.

It could be very important with respect to the large business sector if there was an invention that arose under a contract, where the contractor had a parallel line of business and chose not to develop the newer invention because they had a vested interest in the older one. And I think the Federal Government in that case should march-in and say, "We want you to either develop that invention or give it back to us so we can license someone else, or you must license a competitor." Is that responsive to your question, sir?

Mr. **Mineta**. Well, let me ask this. What about the length of that exclusive licensing? Do you grant that for 17 years, or is that for a shorter period of time in order to have it on a short chain?

Mr. **Ditzel**. We license in a number of ways. One is nonexclusive when a nonexclusive license will get the product to the market. A second is a limited term exclusive or a field of use exclusive, when we can cause someone to invest some money to develop the product. Very often where you have a new drug or an agricultural chemical, it will take many millions and many years to develop, we will in fact license exclusively where we feel that's important. We cannot currently do that where there has been Federal funding involved. We do it where there has not been Federal funding involved. Exclusive licensing is not a contentious issue at the University of California. We're trying to get products on the market, and very often that exclusive right of patent license is essential to that, especially if you want the licensee to really put their best efforts in getting that product to the market.

Mr. **Mineta**. Does that exclusivity depend on the commercialization of the product?

Mr. **Ditzel**. Absolutely. We have what we call diligent development, which is what you call march-in rights. Our license agreements provide that if the licensee is not diligent in developing and marketing the product, that the license can be terminated. As a matter of public policy we have done that; we do use a little different language than march-in rights, but it's the same public intent. We're a public university, as you well know, sir. And we have that concern.

Mr. **Mineta**. Are you interested in all of the inventions coming from the three national labs which you administer, or would you primarily be licensing to third parties? If the latter is the case, would you be willing to share licensing fees with the Government?

Mr. **Ditzel**. We are interested only in certain of the inventions arising in the DOE laboratories. Certainly we have no interest in weapons inventions. We have no interest in those inventions that aren't at all going to be commercial for 20 years, such as fusion and some of those things. We do have other inventions which arise which have very practical use or may need additional funding within the laboratory from a commercial company. We are interested in those and have worked closely with our laboratory groups and laboratory directors in that regard. What we normally would do would be to pay back to the laboratory a portion of that royalty income, including inventors' shares, just as we currently pay inventors' shares to our other employees. And we have had discussions with the laboratories on that point, so that there could be some moneys go back for research and development also in the laboratories. I would hope that we would not be required to return everything to that laboratory, because then we have no incentive to take the risk.

Mr. **Mineta**. And what section of the bill would prevent you from getting weapons licenses?

Mr. **Ditzel**. Well, it's my understanding—and this is why I commented orally—in reading the language on page 26, section 202(a) under (15)(C), the insertion there could be construed to be that. But I'm not sure we don't need some additional language considered to make sure the intent of that is clear. I don't want weapons patents. First of all, they would be under secrecy order anyway, so they would never see the light of day; and second, I'm not in the business of licensing nuclear weapons and don't want to be.

Mr. **Mineta**. Thank you, Mr. Chairman.

Mr. **Walgren**. Well, let's hope any such licenses will be exclusive, one way or another.

Mr. **Ditzel**. Yes, sir.

Mr. **Walgren**. Thank you, Mr. Mineta.

Well, we appreciate your contribution, Mr. Ditzel, and let's turn then to Dr. Fischell. Dr. Fischell is with the Applied Physics Laboratory at Johns Hopkins University and, as we said at the outset, please feel free to summarize your remarks and make the points that you feel most important. Your written testimony will be reproduced as submitted and made part of the record so the detail will be there, and we appreciate your coming and making yourself available to us, Dr. Fischell.

STATEMENT OF DR. ROBERT E. FISCHELL, CHIEF OF TECHNOLOGY TRANSFER, SPACE DEPARTMENT, THE JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY

Dr. **Fischell**. Thank you, Mr. Chairman and members of the subcommittee. My name is Robert E. Fischell. I am the chief of technology transfer and assistant head of the space department of the Johns Hopkins University Applied Physics Laboratory. I am most pleased to present testimony today on H.R. 5003 from several viewpoints—as a university physicist, as the chief of technology transfer responsible for transferring Government-sponsored research into manufactured devices for commercial sale, as an individual inventor with 23 issued patents, and finally as a member of the board of directors of two corporations involved in utilizing Government and other sponsored research with a goal of marketing useful products.

I would particularly like to relate my hands-on experience in transferring NASA-sponsored research into medical devices which have been licensed to private U.S. corporations. In this respect, my university has licensed three different companies to manufacture five different devices which were a direct result of NASA-sponsored activities at our laboratory. In addition, our laboratory has licensed two other products to two additional companies using the licensing methodology that we learned from NASA's space technology transfer programs.

We did not always succeed at first in obtaining these licenses for the manufacture of the products resulting from our research and development activities. On more than one occasion, we attempted to obtain a license and did not succeed in our initial efforts. However, with some perseverence we have always succeeded in obtaining such licenses. An absolutely essential part of obtaining such agreements has been the fact that we could provide the prospective manufacturer with an exclusive license for the useful life of the patent; that is, 17 years from the date of issue.

Since most of our work was NASA-sponsored, under existing law we had to request a waiver of the Government's rights in order to provide such an exclusive licensing arrangement for the life of the patent and to large entities. Our sponsors at NASA believed, as we did, that the best interest of the public was served by allowing our university to grant such exclusive licenses without which attribute no company was interested in manufacturing the products that our laboratory had created. In this respect, I can characterize NASA as being cooperative, capable, and handling our waiver requests with great dispatch. NASA's actions were invaluable in helping us to obtain licensing agreements. The benefits of space technology derived from NASA's research and development activities at our laboratory have, therefore, been made available for the public good.

The bill under consideration here, H.R. 5003, should make all federally funded research and development activities performed by universities and large and small corporations available by statute for exclusive licensing to any corporate entity that is ready, willing, and able to make such technology available to the public. I see this as an important step forward in promoting the benefits that could be derived from all Government-sponsored research and development activities. If passed, this law would, in fact, make available to all organizations performing such Government-sponsored research the same benefits that have accrued to my university with the consent and encouragement of NASA.

Although I do believe that this bill as proposed is clearly a step forward, I would like to express some concerns, based on my personal experience, as to how this bill would affect the transfer of Government-sponsored research into the private domain. My first concern is relative to the timely notification to the sponsoring Federal agency that some innovative accomplishment has occurred. Under section 301(c)(1) the contractor must "disclose each subject invention within a reasonable time after it is made." In my opinion this presents two problems.

One, it is the nature of busy inventors and contractor patent attorneys to procrastinate whenever there is not a clearly stipulated time limit for taking some action. Therefore, I recommend that a specific time limit of, let us say, 1 year from completion of a written description of the innovation be explicitly stated in the law. That should be enough time for anyone and should get the technology reported in a timely fashion. It would also prevent contractors from sitting on such technology without taking appropriate action needed to promote commercialization.

Second, it is reported to me that 80 percent of the material published by NASA as "Tech Briefs" relates to nonpatentable innovations. Therefore, it is important that even unpatentable but significant technological developments be reported in a timely fashion so that the results of Government-sponsored research and development be more fully disseminated. A good example of this is computer software which can require millions of dollars for its development, would be of value for others to use, and yet is not considered under section 301(c)(1) because it is not an invention. I, therefore, recommend that nonpatentable but nevertheless significant innovations also be reported for eventual dissemination.

The last concern that I have relative to this bill is that the skill and experience developed by NASA in successfully managing technological developments resulting from NASA-sponsored research and development will somehow be compromised when considerable responsibility for technology transfer is given over to the Department of Commerce. In this respect, I strongly recommend that if this bill becomes law and the Secretary of Commerce under the provisions of this bill forms a committee to implement its provisions, that one or more NASA representatives play a key role on such a committee. That way, NASA's hands-on experience with technology transfer can be applied to the greatest advantage. Further, NASA's considerable wisdom in the administration of technology transfer and technology utilization would then be made available for the benefit of promoting the commercialization of all Government-sponsored research and development activities. I would then expect the result would be to considerably increase the efficiency of utilizing Government-sponsored research and development for the public good.

I would be pleased to answer any questions that you have. As I said, having personal experience in the last 15 years in making inventions, working with private corporations, and getting it into the public's hands, I would be glad to relate my experience and respond to any questions you might have.

[The prepared statement of Dr. Fischell follows:]

TESTIMONY OF

ROBERT E. FISCHELL
CHIEF OF TECHNOLOGY TRANSFER
SPACE DEPARTMENT
THE JOHNS HOPKINS UNIVERSITY
APPLIED PHYSICS LABORATORY
LAUREL, MARYLAND

ON H.R. 5003
"UNIFORM SCIENCE AND TECHNOLOGY RESEARCH AND DEVELOPMENT UTILIZATION ACT"

BEFORE THE
SUBCOMMITTEE ON SCIENCE RESEARCH AND TECHNOLOGY
ROOM 2325
RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, D.C.

15 MAY 1984

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We did not always succeed at first in obtaining these licenses for the manufacture of the products resulting from our research and development activities. On more than one occasion, we attempted to obtain a license and did not succeed in our initial efforts. However, with some perseverence we have always succeeded in obtaining such licenses. An absolutely essential part of obtaining such agreements has been the fact that we could provide the perspective manufacturer with an exclusive license for the useful life of the patient; i.e., 17 years from the date of issue. Since most of our work was NASA sponsored, under existing law we had to request a waiver of the government's rights in order to provide such an exclusive licensing arrangement. Our sponsors at NASA believed as we did that the best interest of the public was served by allowing our University to grant such exclusive licenses without which attribute no company was interested in manufacturing the products that our Laboratory had created. In this respect, I can characterize NASA as being cooperative, capable, and handling our waiver requests with great dispatch. NASA's actions were of invaluable assistance in helping us to obtain licensing agreements. The benefits of space technology derived from NASA's research and development activities at our Laboratory have, therefore, been made available for the public good.

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developments be reported in a timely fashion so that the results of government sponsored research and development be more fully disseminated. A good example of this is computer software which can require millions of dollars for its development, would be valuable for others to use, and yet is not considered under Section 301.(c)(1) because it is not an "invention." I, therefore, recommend that nonpatentable but nevertheless significant innovations also be reported for eventual dissemination.

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BIOGRAPHICAL SKETCH FOR ROBERT E. FISCHELL

Present Titles held at The Johns Hopkins University, Applied Physics Laboratory:

Assistant Head, Space Department
Chief of Technology Transfer, Space Department
Principal Staff Physicist

Present Title at Johns Hopkins University:

Instructor in Space Technology

Born: New York City, February 10, 1929

Education: Duke University, B.S. (Mech. Engr.), 1951
University of Maryland, M.S. (Physics), 1953

Honors and Awards: Graduate Cum Laude from Duke University Phi Beta Kappa (scholastic), Tau Beta Pi (engineering), Pi Tau Sigma (mechanical engineering), Sigma Pi Sigma (physics), Pi Mu Epsilon (mathematics). Beta Omega Sigma (leadership), Phi Eta Sigma (scholarship). Honorary member, Maryland Academy of Sciences, 1969 to present; ASME Technical Achievement Award for 1962. Award by Washington Academy of Sciences as outstanding Young Engineer in Washington National Capital Area for 1963. Award from Industrial Research magazine (IR-100 Award) for one of the 100 most significant inventions in the year 1967 for Satellite Spin Control System; a second IR-100 Award in 1970 for Rechargeable Cardiac Pacemaker; third IR-100 Award in 1973 for work on a drag free satellite. Listed in Who's Who in the East and American Men and Women of Science. Holder of 25 United States and foreign patents in the fields of spacecraft and biomedical devices. Inventor of the Year for 1983.

Professional Memberships:

Member, American Institute of Aeronautics and Astronautics (AIAA). Member, AIAA Technical Committee on Space Guidance and Control, 1972-1975; Chairman, National AIAA Guidance and Control Conference, 1973; Member, International Federation for Automatic Control, Space Committee, 1970-1975. Member, Institute of Electrical and Electronics Engineers (IEEE), 1953 to present. Member and Chairman of IEEE, Photovoltaic Specialists Committee, 1959 to 1972. Member, American Society of Mechanical Engineers, 1951 to 1969. Member of the Board of Directors of Pacesetter Systems, Inc., Sylmar, CA. Member, Board of Directors of Patlex Corporation, Philadelphia, PA.

Work Experience:

U.S. Naval Ordinance Laboratory, White Oak, MD, 1951-1956. Emerson Research Laboratory, Silver Spring, MD, 1956-1959. Johns Hopkins University/Applied Physics Laboratory, 1959-Present.

Mr. WALGREN. Thank you very much, Dr. Fischell. You really do have the immediate experience, and we appreciate your testimony coming from that experience about the motivation of an inventor and what might be more motivating to him.

You are very clear on wanting a time limit as opposed to general march-in pressure, as it were. Can you tell us—I guess the argument was that if you had march-in rights, there's sort of an ongoing right of the Government that could be raised and therefore pressure to do something at every point in time, whereas if you have a time limit before which you must do something, either the time can expire without anything being done or the pressure's not there in an earlier period of time.

Do you think march-in rights are an effective leverage on an inventor not to procrastinate and to try and make progress?

Dr. FISCHELL. Yes, sir; I certainly do. I think that the march-in right, as written in this bill, should be there. We, as a university, license private corporations to develop our inventions. We like to know that we have even the Government's march-in rights to help promote them, to help encourage them to move along swiftly.

The specific time limits that I was referring to were relevant to the dissemination to the Federal agency that yea, verily, an innovation has been made. I myself, like most busy people—undoubtedly most inventors—the patent attorneys come on to me and say, "Hey, Bob, why aren't you reporting this?" I say, "Oh, well * * *" and they say, "You know, we have so many months"—as a matter of fact, with NASA, 2 months—"to report," which is a little limiting. And I say, "OK, I will do it." They say, "You know, it's very important, what you're doing; it should be known as part of the law," and so on.

So what I'm saying, really, is that I'm not really addressing the question of timeliness once the invention is underway vis-a-vis march in rights, but rather that the present wording of the law says that sometime you can tell the Federal agency that sponsors your work what you've done. And I know everyone's a procrastinator in this kind of thing because, in the inventor's mind, his mind is on the invention; he doesn't care about disclosing, what have you, to proper authority, and so on. So it does not get disseminated. So I would just suggest that we have, for example, a year from the first written description in that regard. And I am an advocate of march-in rights.

Mr. WALGREN. Would you favor a fixed period of time in place of the march in rights, with withdrawal of the patent if nothing happened within a period of time?

Dr. FISCHELL. I think that would be workable. I have heard the testimony from the people from the Department of Commerce, and I would agree for that, too; I would vote, for example, to allow march in rights and maybe somebody, your staff, in conjunction with the Commerce Department people, decide on some reasonable time. Three years, maybe, or 5 years, and possibly relative to certain milestones. As with the University of California, we put the equivalent of march in rights into our licensing agreements that by certain dates they must produce certain models; for example, a first working model by a certain date, a preproduction prototype by a certain date, or lose all rights. So we in effect are doing that in our licensing arrangements at the present time. March in rights are probably good, and maybe in addition, a certain time limit by the Govermment that you either move on it or you lose those rights.

Mr. **Walgren**. I understand that you also have had experience with NIH as a grantee. Can you contrast NIH and NASA as to differences in their approach to this area?

Dr. **Fischell**. NASA has been extremely helpful and encouraging. NIH seems to have no interest as far as we've seen in dealing with us. Before 96-517, it was highly restrictive to have to work with NIH and it discouraged us from proceeding, and even accepting contracts from them. Now, under 96-517, we can only get, as a university, an exclusive license for 5 years from first commercial sale or 8 years from licensing to large entities. That's still a restraint that we'd have to live with with NIH, and we haven't ever tried to get a waiver from them because we hear it's difficult.

So I would say that NASA has been very encouraging and they want to promote this because it's part of the role of NASA under the Space Act, to promote the use of space technology for the public good. NIH doesn't seem to have that equivalent role, so we certainly have done much better with NASA than we have with NIH, and I think that this new law will mean that we can deal with NIH equally well because by statute we'll have what we need as a university to promote our patents.

Mr. **Walgren**. That's an interesting contrast, and you wonder what goes into it. I was under the impression that the universities were already in the position to get from NIH whatever they would get from NIH under at least the last 3 years we've had this in effect.

Dr. **Fischell**. Oh, yes.

Mr. **Walgren**. That does not change your relationship with NIH, does it?

Dr. **Fischell**. Well, 96-517 has certainly made it easier to deal with NIH and made us less concerned, and H.R. 5003 will improve it further, in my opinion.

Mr. **Walgren**. Thank you very much.

Mr. **Ditzel**. May I comment on that? From the University of California's standpoint and also my experience at Iowa State University, NASA has always been very good to deal with and easy to deal with, but in my experience HEW has, also. In fact, many of the provisions in 96-517 grew out of the old HEW and its institutional patent agreements. So there our experience differs, perhaps. We receive about $400 million—$300 million a year—from NIH at the University of California.

Mr. **Walgren**. Mr. Mineta.

[No response.]

Mr. **Walgren**. Let me see if I've covered the ground that we set out for ourselves. I think we have.

Well, let me, on behalf of the committee, thank you very much for your contribution. NASA is selling its wares down the hall at 2318 at this point; if you would like to go down there and see some films of the most recent space mission, it might be of interest to you. We appreciate very much the time that you've given to us.

We will adjourn until tomorrow at 9:30.

[Whereupon, at 11:20 a.m., the subcommittee recessed, to reconvene at 9:30 a.m., Wednesday, May 16, 1984.]

H.R. 5003—THE UNIFORM SCIENCE AND TECHNOLOGY RESEARCH AND DEVELOPMENT UTILIZATION ACT

WEDNESDAY, MAY 16, 1984

House of Representatives,
Committee on Science and Technology,
Subcommittee on Science, Research and Technology,
Washington, DC.

The subcommittee met, pursuant to notice, at 9:34 a.m., in room 2318, Rayburn House Office Building, Hon. Doug Walgren (chairman of the subcommittee) presiding.

Mr. **Walgren**. The subcommittee will come to order.

Welcome to the second day of hearings on H.R. 5003, the Uniform Science and Technology Research and Development Utilization Act. This legislation represents a continuation of Federal patent policy reform and an expansion of the effort that began with Public Law 96-517, which several years ago gave small businesses and nonprofit organizations the right to retain patents to inventions developed while working under Government contract. The ultimate objective of the bill is to promote and maximize the commercialization and use of inventions and new technology which results from Government-funded research.

The subcommittee has been particularly concerned with the subject of innovation and productivity in Government and in industry and in being able to meet the international competitive competition that the United States faces today. Federal patent policy is an important element in that problem, and these hearings have been scheduled with that issue in mind.

The witnesses for both days of hearings have been asked to address such issues as whether to permit government contractors to retain title rights to federally funded inventions; the impact of the proposed legislation on universities and small businesses; and the effect of the legislation on existing technology transfer programs. We look forward to continuing the discussion today with the witnesses that make up the list today. I would like to welcome you to the subcommittee today.

I always feel compelled to underscore that what we can best do is develop a record that will serve as a base of consideration for other members and the staff which works from these documents to try to develop a legislative consensus that can secure the approval of the necessary number of members in the committee and serve as a background for development of the legislative process as it goes on. In light of that, your written statements will be made part of that record and will be reproduced word for word as you have submitted them. We would like to ask you, in your presentation to the committee, to outline those points that you feel are most important to make in whatever way you feel most effective in communicating them.

With that, let me recognize Mr. Sensenbrenner, if he would like to make an opening statement.

Mr. **Sensenbrenner**. No, thank you, Mr. Chairman.

Mr. **Walgren**. Mr. Brown.

Mr. **Brown**. No, thank you, Mr. Chairman.

Mr. **Walgren**. We will start with Mr. Alexander who is vice president of Intellectual Property Owners. We want to welcome you to the committee, Mr. Alexander, and we appreciate your having gone out of your way to come and participate in this process.

STATEMENT OF CRUZAN ALEXANDER, VICE PRESIDENT, INTELLECTUAL PROPERTY OWNERS, INC.

Mr. **Alexander**. Mr. Chairman and members of the subcommittee, thank you for this opportunity to discuss H.R. 5003. I am appearing here today as vice president of Intellectual Property Owners, Inc. IPO is a nonprofit association whose members own patents, trademarks, and copyrights. Our members include large corporations, small businesses, universities, and individuals.

IPO members are responsible for a large portion of the research conducted in the United States today. IPO believes it is very important to have laws governing patent rights that provide maximum incentives for large and small companies and universities to participate in Government-funded R&D programs. IPO supports H.R. 5003 because it will encourage R&D.

The views I am expressing here today are also supported by the 3M Co. by whom I was employed for 37 years before retirement last year from the position of its chief patent counsel. The 3M Co. has spent over $400 million in R&D in 1983 but has not been a large participant in Government-funded projects. During my testimony, I will be making frequent references to the experiences I have had with 3M.

IPO believes industry in general supports this legislation which extends the title policy of Public Law 96-517 to large businesses as well as small businesses.

Giving universities, nonprofit organizations, and small businesses such rights, though laudable in itself, is not adequate for the Government to increase participation in federally funded R&D by large firms with a wealth of R&D skills, expertise, and experience built up over many years on a scale not enjoyed by small businesses or universities. Unless the license policy of Public Law 96-517 is extended to businesses without discrimination as to their size and tax status, many large firms will be reluctant to accept contracts with Federal agencies which follow the title policy. We believe this practice is not in the public interest of the Nation as a whole.

This bill will remove much of the bureaucratic redtape and make all Government agencies adhere to a uniform and simplified Government patent policy. If this bill is enacted, it will establish a congressional policy not subject to change at the whim of an agency or the politics of an administration.

The high technology companies like 3M, companies that are often coveted by Federal agencies for performance of federally funded R&D, are often the hardest to convince to take on such R&D work. One reason is because such contracting activity reduces substantially the degrees of freedom normally associated with a supply and demand marketplace. Under a Government contract, the contractor would have to comply with a form of control by the Government which decides what will be researched, how it will be researched, and for how much money.

Another reason is that the profit for performing Government R&D contracts is usually in the nature of a fixed fee falling in a limited range of negotiability which generally does not equal the greater potential profit sought by the sale of new products derived from self-funded R&D programs.

Many companies are also reluctant to take on federally funded R&D contracts because they will often tie up the company's best qualified and productive research and development employees and equipment on work that will not generate profitable products protected by company-owned patents, the type of patented product that the companies hope to sell.

These reasons for avoiding Government R&D contracts may be overcome if the potential for a new product which is proprietary to the contractor is great enough.

The patent policy attributed to the governing statutes or regulations of some Federal agencies require contractors to give title to the Government to inventions made under the Government R&D contracts. Such policy would deprive contractors of the intellectual property rights which normally accrue to them from their privately funded R&D operations. Thus, this policy is usually unacceptable to many companies.

In the case of 3M, if the subject matter of a Government R&D contract relates to a business area where 3M has expended its own funds, and the performance of the contract portends expansion by 3M of that business area, 3M will seek to have such patent clauses modified to give 3M greater patent rights than the agencies normally grant. Specifically, 3M will seek title to inventions made by it under the contract. Without title to 3M in such inventions, 3M may and often does decline such contracts.

Large firms, which have specialized skills and background and prior investment in technology of interest to the Government, and which employ the incentives of the patent system, will thus continue to shy away from contracts based on the title policy of the Government. Only those firms who are driven by economic necessity, or which perhaps are less qualified to perform the R&D efforts of interest to the Federal agency, will take such contracts. Continuation of such title policy contracts will inhibit innovation and interfere with or limit the commercialization of technology and the transfer of its benefits to the public. It is best to do away with the Government title policy as is done in H.R. 5003.

In summary, IPO enthusiastically supports this bill, because it believes that the bill will bring into the bidding process for Government-funded projects many well qualified, high technology companies who have heretofore been reluctant to participate in the past. These are the companies that the Government needs the most to solve its technology problems and at the same time have the best chance for the commercialization of the results.

Mr. Chairman, I sincerely appreciate this opportunity to present these comments.

[The prepared statement of Mr. Alexander follows:]

IPO INTELLECTUAL
PROPERTY
OWNERS, INC.

STATEMENT OF

CRUZAN ALEXANDER

VICE PRESIDENT

INTELLECTUAL PROPERTY OWNERS, INC.

BEFORE THE

SUBCOMMITTEE ON SCIENCE, RESEARCH AND TECHNOLOGY
COMMITTEE ON SCIENCE AND TECHNOLOGY
UNITED STATES HOUSE OF REPRESENTATIVES

MAY 16, 1984

ON

H. R. 5003, THE UNIFORM SCIENCE AND TECHNOLOGY RESEARCH
AND DEVELOPMENT UTILIZATION ACT

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STATEMENT OF
CRUZAN ALEXANDER, VICE PRESIDENT
INTELLECTUAL PROPERTY OWNERS, INC.
BEFORE
SUBCOMMITTEE ON SCIENCE, RESEARCH AND TECHNOLOGY
HOUSE COMMITTEE ON SCIENCE AND TECHNOLOGY
ON H. R. 5003

May 16, 1984

Mr. Chairman and members of the Subcommittee:

Thank you for this opportunity to discuss H. R. 5003. I am appearing here today as Vice President of Intellectual Property Owners, Inc. IPO is a nonprofit association whose members own patents, trademarks and copyrights. Our members include large corporations, small businesses, universities, and individuals.

IPO members are responsible for a large portion of the research conducted in the United States. IPO believes it is very important to have laws governing patent rights that provide maximum incentives for large and small companies and universities to participate in government-funded R & D programs. IPO supports H. R. 5003 because it will encourage R & D.

The views I am expressing here today are also supported by the 3M Company by whom I was employed for 37 years before retirement last year from the position of its Chief Patent Counsel. The 3M Company has a vital interest in the results of R & D. 3M spent over $400 million in R & D in 1983 but has not been a large participant in government-funded projects. During my testimony I will be making frequent references to the experiences I have had with 3M. Also you might note, that I am presently President-Elect of the Licensing Executives Society, Inc. of USA and Canada, an organization of professionals dealing with the results of R & D programs such as we are considering today.

IPO believes industry in general supports legislation which extends the title feature of P. L. 96-517, "The Patent and Trademark Amendment of 1980", to large business as well as small business and the incentive of contractor ownership in inventions it makes in performance of Government R & D contracts.

Giving universities, nonprofit organizations, and small businesses such rights, though laudable in itself, is not an adequate means for the Government to increase participation in federally-funded R & D by large firms with a wealth of R & D skills, expertise, and resources built up over many years by seasoned teams on a scale not enjoyed by small businesses or universities. Unless the license policy of P. L. 96-517 is extended to businesses without discriminating as to their size and tax status, many large firms will be reluctant to accept contracts with Federal agencies which follow the title policy or will continue to contract with them on a limited scale. We believe this practice is not in the public interest of the Nation as a whole.

By this legislation, H. R. 5003, government-industry links would be established to move technology more rapidly into the private sector much the same way that university-industry cooperation was enhanced substantially by the enactment in 1980 of the University and Small Business Patent Procedures Act (Public Law 96-517), which provided for university ownership of inventions made in performance of federally-funded research. This important law cleared away years of bureaucratic red tape that hampered university technology transfer efforts by clouding the ownership of inventions made with federal funds. With this cloud removed, university-industry cooperation--so long frustrated by outdated government policy--exploded.

So, too, does this bill remove much of the bureaucratic red tape and make all government agencies adhere consistently with a uniform and simplified government patent policy applicable to large business. If this bill is enacted, it will establish a Congressional policy not subject to change at the whim of an agency or the politics of an administration.

A law such as P. L. 96-517 alone does not help to sufficiently promote the utilization of inventions arising from Federal R & D contracts, or encourage participation in such contracts, or promote commercialization of such inventions, because large businesses are omitted in such law. Though some Federal agencies under their present regulations may give title to such inventions to large business contractors under some circumstances, those agencies may read into this omission of the law an intent by Congress that large firms should be precluded from obtaining title to such inventions under any circumstances or treated less favorably than small businesses and universities.

The rationale and incentives of the title feature of P. L. 96-517 logically should be no less applicable in the case of large firms--they should not be discriminated against with respect to Government patent policy. The full benefits of the incentives of the patent system should be made available to all contractors when they undertake federally-funded R & D contracts.

The high technology companies like 3M, companies that are often coveted by federal agencies for performance of federally-funded R & D, are often the hardest to convince to take on such R & D work.

One reason is because such contracting activity reduces substantially the degrees of freedom normally associated with a "supply and demand" market place. Under a Government R & D contract, the contractor would have to comply with a form of control by the Government, which decides what will be researched, how it will be researched, and for how much money.

Another reason is that the profit for performing Government R & D contracts is usually in the nature of a fixed fee falling in a limited range of negotiability which generally does not equal the greater potential profit sought by the sale of new products derived from self-funded R & D programs.

These reasons for avoiding Government R & D contracts may be overcome if the potential for a new product which is proprietary to the contractor is great enough. Nevertheless, many companies are reluctant to take on federally-funded R & D contracts because they will often tie up the Company's best qualified, productive research and development employees and equipment on work that will not generate profitable products protected by company-owned patents - the type of patented product that companies hope to sell. Often companies, like 3M, are reluctant to do Government R & D work because of concern with those provisions of Federal patent policy which withhold the full incentives of the patent system that many companies employ to strengthen their business. Specifically, I am speaking about those provisions of the present law which permit denial to large businesses of the ownership in patents covering inventions they make as contractors under Government R & D contracts.

The patent policy attributed to the governing statutes or regulations of some of the Federal agencies require contractors to give title to the Government to inventions made under the Government R & D contracts. Such policy would deprive contractors of the intellectual property rights which normally accrue to them from their privately funded R & D operations.

Thus, this policy is usually unacceptable to many companies.

In the case of 3M, if the subject matter of a Government R & D contract relates to a business area where 3M has expended its own funds, and the performance of the contract portends expansion by 3M of that business area, 3M will seek to have such patent clauses modified to give 3M greater patent rights than the agencies normally grant (and are accustomed to granting). Specifically, 3M will seek title to inventions made by it under the contract. In some instances this can be negotiated favorable to 3M because of the permissible waiver of the title policy by certain agencies. But, without title to 3M in such inventions, 3M may and often does decline such contracts.

This Federal title policy can also have some effect on the career and recognition of a contractor's research people, since their success and recognition with a high-technology company is often linked directly to profit, and profit is often linked directly to new products covered by patents owned by the company. When large firms enter into Government R & D contracts based on the present title policy, their inventor-employees who are assigned to such contracts may be less motivated or not encouraged to invent or exert a susperior effort, knowing their inventions are destined for Government ownership and will probably languish as noncommercialized inventions.

Large firms, which have specialized skills and background and prior investment in technology of interest to the Government, and which employ the incentives of the patent system, will thus continue to shy away from contracts based on the title policy of the Government. Only those firms which are driven by economic necessity, or which perhaps are less qualified to perform the R & D efforts of interest to the Federal agency, will take such contracts. Such title policy contracts will continue to inhibit innovation (already in decline in many sectors of industry) and interfere with or limit the commercialization of technology and the transfer of its benefits to the public.

We are aware that this bill removes the 5-year exclusive limitation on universities when they license or transfer technology resulting from Government funded R & D. IPO strongly supports this portion of the bill, as the removal of this limitation will strengthen the universities' negotiating posture in dealing with the private sector in connection with technology resulting from Government funded R & D.

It is interesting to note that the Japanese have indicated a concern that the President's policy and the Senate counterpart of H, R, 5003 will curtail free access to our publicly funded discoveries. Under present policies, too often federal agencies retain patent ownership and then destroy the domestic value of the invention by offering licenses to all comers. Such policies, along with the reams of technical information routinely made available by our government, has been a valued resource to our foreign competitors. The President's policy and its extension by H. R. 5003 will not only encourage the domestic development and commercialization of federally funded technology, but will create a need for foreign competitors to negotiate the use of the technology with its owner.

In summary, IPO enthusiastically supports this bill, because it believes that the bill will bring into the bidding process for government-funded projects many well-qualified, high-technology companies who have heretofore been reluctant to participate. These are the companies that the government needs the most to solve its technology problems and at the same time have the best chance for commercialization of the results.

Mr. Chairman, I sincerely appreciate this opportunity to present these comments. Attached I have listed several suggested amendments which will improve the language and substance of H. R. 5003 for consideration of your staff.

APPENDIX

H. R. 5003

Suggested amendments and corrections to H. R. 5003 dated March 1, 1984:

Page 9 - Delete paragraph (4) lines 14 to 17.
Too broad, no standard, defeats purpose of act.

Page 10 - Line 19, insert after "invention" - - to the Government or cognizant Federal agency - - -.
For clarification purposes, editorial only.

Page 11 - Line 1, cancel "a reasonable time" and insert therefor - - 2 years - -.
Too vague and indefinite; 2 years is a reasonable time to determine the merits and potential commerciality of the invention.

Page 11 - Delete paragraph (D), lines 14 to 16.
Redundant in view of following paragraph (E).

Page 11 - Line 20 after "within", delete remainder of sentence to line 22 and replace with - - - 2 years after contractor elects to retain title; - - - same as Page 11, line 1, supra this modification should be either the former place or here.

Page 12 - Line 22, cancel "make, use and sell the" and insert therefor --- practice or have practiced any - - -.

Line 23, insert after "Government" - - -for governmental purposes - - -. Otherwise would allow government to compete with private sector; also make it consistent with university and small business bill.

Page 12 - Line 25, Page 13 line 1, cancel "the commercial use or other forms of utilization or".
See below.

Page 13 - Line 1, cancel "commercial utilization" and insert therefor - - practical application - - -. Better language, change editorial in nature.

Page 13 - Line 8, before commercial insert - - - trade secret - - -.
Consistent with USC 552 (b)(4).

Page 14 - Line 5, cancel "elect to" and after "title" insert, - - - either by not electing or not filing an application - - -.
This is more correct than previous wording.

Page 14 - Line 10 through line 12, cancel "which license - - an exclusive license;"
If the contractor has an established business in subject invention or has expended money to go into business, this would close him down, cause great financial loss and amount to taking property without due process.

Page 15 - Line 2 after "time", insert - - - return title to the contractor or - - -.
Primarily a correction in language.

Page 15 - Line 12, after "facilities", insert - - - personnel, data, - - -
More complete list.

Page 15 - Between lines 14 and 15 insert - - (3) it is necessary to do so in order to protect trade secrets of the contractor developed independent of the contract.- - -.
An additional worthy reason.

Page 16 - Line 9, Change "retains" to - - - gains - - -.
Better language.

Page 16 - Line 22, Cancel "grant or". Government has no title so cannot grant.

Page 16 - Line 25, after "applicants", insert - - - except for an irrovacable, nonexclusive, royalty-free license retained by the contractor - - -.
See Page 14, line 10 supra.

Page 17 - Line 4, Change "or is not expected" to - - - and does not expect - - -.
Better language.

Line 6, before "invention" insert - - - subject - - -
Editorial.

Page 18 - Sections "(b)" and "(c)" should be deleted (lines 5 through 25).
Inconsistent with Sec 304(a).
Onerous provisions.
Could amount to blackmail.

Page 20 - Line 20, Delete "or may" and insert therefor - - - reasonably believed by the contractor to - - -.
Correction, better language.

Line 22, amend same as line 20.

Page 20 - Line 25, after "contractor" insert - - - relating to the subject of the contract and - - - .
Too broad otherwise; this is real intent.

Page 21 - Line 10, after "invention" insert - - - or the substantial equivalent or alternative - - - .
Need to cover defensive patent situations. One patent may not be used because the equivalent is being used. Common in industry to have this situation

Mr. **Walgren**. Thank you very much, Mr. Alexander.

I guess it is fair to say that the Congress sort of put its toe in the water when it moved to enable small businesses and small firms and universities to, by definition, benefit from the patents related to Government work. I just want to ask whether you feel that there is any reason to limit that kind of participation to small businesses or do you feel that the emphasis here should be on providing the maximum incentive to the private sector to move in these areas and that the distinction between small businesses and nonprofit businesses is just not significant.

Mr. **Alexander**. Yes; as I have said in my statement, I feel there is no reason for limiting the title policy of this bill to small business and universities. Most research that you can get for solving Government problems is probably from the larger companies. If they are left out, they will be very reluctant to take on these contracts, as I have said.

I think the bill goes in the right direction. It puts small businesses, universities, and large corporations on the same footing, which I think is a good policy.

Mr. **Walgren**. Did you have actual experience with a company not being interested in doing Government work because they would not have been able to secure the patents? I understand the Defense Department and the various departments may have different historical approaches to this. The Defense Department would be quite ready to give patent rights, and therefore there would be no reason for even a large company to shy away from pursuing research in that area. Have you had actual experience where companies have said, in effect, I just don't want to be bothered because I am not going to be able to benefit from the patents that might come along?

Mr. **Alexander**. Yes. I think 3M is one of those companies that has been very reluctant to take on Government-funded contracts for R&D. One reason is because of the title policy in the U.S. Government.

Mr. **Walgren**. Did they ask for waivers and find them not readily received?

Mr. **Alexander**. Yes. Historically, waivers have not been that easy to get. It has only been very recently, in view of the administration's memorandum on this subject, that waivers are much easier to get now. However, 10 or 15 years ago, it was very difficult as it has been up until about the last 2 years. Often, you can't get a waiver. Sometimes, when you do, it often takes a lot of time and a lot of work to convince the Government that you need a waiver.

I think this bill does away with that. It will get rid of a lot of redtape and create a lot more certainty for what lies ahead in the future for companies that are bidding on Government R&D contracts.

Mr. **Walgren**. Do you have any suggestion with respect to how to be sure the patents that do go to the contractor are in fact developed to the best degree possible? We have, as I understand it, general march-in rights to try to remove rights from one party who may not be pursuing it and transfer them to other parties who would pursue them. Is this a significant problem, in your view?

Mr. **Alexander**. I am not quite sure of your question, but maybe I can paraphrase it a little. I think your question is, what assurance do you have that a company which gets title to inventions will utilize that invention commercially? I think the very nature of the company will assure that as much as anything else. After all, a company like 3M is in the business of making profits. If there is any profit to be made out of the patent it obtained from the Government. I think that it certainly will.

As you point out, there are march-in rights for those instances where the company is not utilizing the patent, either in a positive way or defensive way, then the Government can try to sell the invention to someone else or license it to someone else. I think you are protected in two areas.

Mr. **Walgren.** I suppose that it might be possible that if a company like 3M were to develop a patent in an area where they also had competing products or already a competing technology that they may not want to pursue that patent and would let it sit. If they had that right, then it would sit unless something were done to remove it.

Mr. **Alexander.** Well, there are defensive patents. That is a well-known phrase in the art. Many companies have defensive patents which they don't use in a positive manner; they don't manufacture the product of the defensive patent. You may have, for example, three products that are equivalent. In the chemistry, there might be different species, but they are equivalent in their function, their results, and their use. It is not very economical or feasible to offer all three of those products when you can offer one. You will offer one product commercially and retain the other two so that somebody else can't compete with you with those other two. If you don't do that, your other patent means nothing to you.

This often happens in practice when you file a patent application where there is a generic claim for which you might have three or four species under that claim. If you can't get the generic claim, the Patent Office requires you to get three patents. If you had the generic claim, you might be able to protect the three species. If you can't get the generic claim, you end up with three patents, but you can't use them all in a positive sense. You can only use one of them. The other two have the same effect as the generic claim.

Mr. **Walgren.** I guess the question is if you developed a related patent, even with a close product relation, with Government money, it probably is in the direct Government interest not to have one firm sitting with a handful of defensive patents, but rather to have those patent rights out trying to create competition. I am trying to see whether you feel that strong march-in rights or any other way of trying to assure that Government money does the most for the public is an important part of this process.

Mr. **Alexander.** I don't know how to answer that much differently than I have. I don't believe, personally, that march-in rights are necessary. I think if it is going to be made commercial, it is going to be made commercial by the company which developed it. They certainly have the best incentive to do it; they have the background to do it.

Mr. **Walgren.** If the Government interest is in competition at that point, if the Government interest or tax money inadvertently led to the development of what would be a patent that would ordinarily be held defensively by a company to protect its range of present marketing products, the Government interest is that there be competition. Therefore, we would not want to see a wide range of defensive patents being held based on Government funding. Wouldn't that be good Government policy?

Mr. **Alexander**. I go back to the same way I answered it before. It is all part of the common picture of a product. If you have a patent that you are using in a defensive manner, that shouldn't make any difference to the Government. The product is being developed and commercialized which is the result of the program——

Mr. **Walgren**. Yes, but I would assume that the product is being developed with less competition if a defensive patent is operating to inhibit the development of a competing product, even though their function is the same. From a public policy standpoint, wouldn't it be true that our interest is first to have the products created and second to have the maximum competition possible. If a policy of the Government led to more broadly held defensive patents, that would not really be constructive.

Mr. **Alexander**. I disagree with that. The public policy here is to provide an incentive for large corporations, universities, and others to take on R&D contracts. If you were to adopt your view, you would say there wouldn't be any patent policy. There would be no patents involved, because that would create the greatest competition.

The point is that you have a bill here that you are trying to create an incentive for corporations to do R&D work. You are willing to give them patent rights on something that they are going to commercialize, but you apparently feel that it is not right to do so on something that is defensive. However, it is all a part of the same picture. It is all part of commercialization.

Mr. **Walgren**. I guess that goes to your point that you don't really support march-in rights, because you feel that we ought to be setting the patent right out there and let that drive the system.

Mr. **Alexander**. That is not exactly true, either. As far as march-in rights go, if the corporation is not using the patent, doesn't want it, and it is something that they are not interested in commercially, doesn't relate to the commercial development or a field in which they are interested, then I would say, sure, take the patent back. In fact, I would think the company would give it back anyway.

However, where you have a species situation as I was talking about, that is all part of the commercial picture. You are going to defeat the commercial picture by taking away, in effect, the patent rights. That is what you are doing when you are operating and letting somebody else manufacture the other species. You are saying, in effect, no patent rights are here. However, that is the very point you are trying to reach. You are trying to provide incentive to the corporations, and that incentive is to have patent rights covering some commercial aspect that they are going to carry out.

Mr. **Walgren**. Thank you very much.

Mr. Brown.

Mr. **Brown**. Mr. Alexander, I am by no means knowledgeable in this field, but I want to ask a couple of general questions.

This committee has a predominant interest in making available the technology generated through Federal expenditures on as broad a basis as possible. We provided at least some of the initiative for the legislation that made the changes for small business and universities.

Other committees of the Congress are not quite oriented in the same way, and one of the criticisms of the previous bill was that this will be a foot in the door and the big corporations will come in and want the same sort of treatment and then we have serious equity questions which have to be explored, so let's not do it.

I am inclined to feel we should expand the rights to patents to any corporation, as this bill does, but I am also going to have to listen to a lot of arguments from my colleagues who say, George, aren't you interested in preventing the taxpayers from being ripped off by the big corporations? After all, they may make a windfall profit on something that they developed without any of their own financial resources going into it, all Federal money, and so forth.

How do I answer that question?

Mr. ALEXANDER. Well, I think you have made one assumption that probably is not correct. For the most part, the Government goes to corporations to solve their technology problems. They go to a corporation that has a lot of background and a lot of experience in a particular area. When they get that contractor to do the work for them, they are paying for only the work that is being done today. They are not paying for any of the background knowledge that those corporations have built over many years. This is very true of 3M.

The only time that Government comes to 3M is because 3M has the expertise and probably the only expertise to solve those problems for them. That expertise, such as film making and film coating has been built up over many years with billions of dollars of research. The Government isn't paying for that.

Mr. BROWN. Your answer is that the offsetting investment the corporation has made and providing the knowledge infrastructure, et cetera, offsets the fact that they do not have to invest their additional capital or to pay out of their pocket for the product development.

Mr. ALEXANDER. Right.

Mr. BROWN. Let me explore this from another standpoint. It will be said that the corporation on a Government research and development job is acting as, in effect, the agent or employee of the Government, and that the Government therefore is entitled to the fruits of the work of that agent or employee and should have full title to the patent or anything else that results from the work. That is a line of argument which seems reasonable to most people. The corporations use that same line of argument in connection with their own employees, as I understand it.

What is the difference? If you expect your employee who works here, but who comes to your corporation with 30 years of prior knowledge and training and education that you didn't contribute to, and he develops a patent while working as your employee, do you give him the patent or do you keep the patent?

Mr. ALEXANDER. I didn't think you were going to ask exactly that question, but the employee is hired to make inventions. He is hired to get patents, because that is what is going to make the company successful. It is going to make it grow; it is going to permit them to hire other employees; it is going to permit them to retain that employee, to promote him, and so forth.

In the case of the Government, it did not go to that contractor because it wanted him to get a patent for the Government. That was not their purpose. The Government agency came to the contractor because they had a particular problem they wanted solved, for Defense purposes, or NASA, or something like that. It didn't make a bit of difference to them whatsoever whether there was any patent or inventions made. There is nothing in the payment policy of the Government that says, if you make an invention, I will give you more money, because they don't care. They want a problem solved. That is my answer to your question.

Mr. **Brown**. And, do you say to your employees, if you make an invention, you get more money?

Mr. **Alexander**. Well, we promote them, we have profit sharing. Yes, they get more. If the company is successful, they certainly will.

Mr. **Brown**. Of course, 3M is an exceptional company, and their practices should be models for all other companies. All companies don't do that, though.

Mr. **Alexander**. I suppose there are exceptions. I think most companies have programs for inventors. However, as I said, one point that you may have missed is that the employee was hired to make an invention. For the most part, these companies can't exist unless they have a new product and that new product is protected. They hire these people, they hire them out of school, they hire the best technical people they can find, just for the purpose of creating new products and getting patents on them.

Mr. **Brown**. That is a good theory, but it doesn't always hold true in practice. You hire a lot of people who are very bright. You don't hire them to make inventions, but sometimes they make inventions anyway. Presumably, an enlightened company will recognize that.

There was an historic case in which a company, Sears, I think, invented a new kind of socket wrench. The employee was not hired to do that; he just did it on his spare time.

Mr. **Alexander**. I don't think he was an employee of Sears.

Mr. **Brown**. Well, maybe it was another company.

Mr. **Alexander**. I think he came to Sears with his invention.

Mr. **Brown**. He got raped, and he had to go to court to get remedy.

Mr. **Alexander**. Well, you can always find exceptions to everything, and bad situations, but just because there is one bad apple, you don't throw the whole barrel away.

Mr. **Brown**. When we are legislating, we have to be careful that we don't create the opportunity for too many exceptions.

Mr. **Alexander**. I would agree with that, and I think this bill does it. I think this bill———

Mr. **Brown**. Now, I am pestering you like this. Basically, I agree with you, but I have to be able to respond to people who don't agree with you, and I want the best possible arguments that I can offer in this kind of situation. Frankly, what motivates the members of this committee is to look at the practical fact that we have a whole warehouse full of patents that the Federal Government holds title to that aren't being developed, and we want to see them developed. We would like assurances that this kind of legislative initiative will result in additional utilization of those patents under some conditions of equity so that the taxpayer doesn't get cheated too much. Basically, the taxpayers get their reward from the development of this patent and putting it on the market.

Mr. **Alexander**. Right. That is where they derive their benefit, having the use of the invention. I think your point is well taken. There is not a better way to assure that an invention is going to be used for the benefit of the public than to have a private corporation or a private individual develop it. That is what they are in the business for, to make money and get things out to the public. The Government is not in that business, and that is why they don't do it. They try to, but that is not their forte.

Mr. **Brown**. Well, we are trying to encourage a more enlightened attitude on the part of Government patent managers or research managers so that they can be more aware of commercial potential and do more to interest private enterprise in developing some of these things. This is another approach to doing that same thing, and we all recognize the importance of it.

Thank you, Mr. Chairman.

Mr. **Walgren**. Thank you, Mr. Brown.

Mr. Skeen.

Mr. **Skeen**. Thank you, Mr. Chairman.

Mr. Alexander, I am extremely interested in what you are saying and your approach, because I think that is the kind of enlightenment that we want from the private sector. I think that the idea that we have here in Congress is that there is a huge warehouse over here of patents, that are sitting there not doing a thing, and because it is a patented idea, that somewhere along the line we are missing the commercialization, and we don't know much about commercialization, but we are sure that you could produce something if someone had access to these. Give me some idea about how they rate the commercialization of a particular idea in a company like 3M.

One of the big arguments we are getting is if it has an exceptionally long time for turnaround on an idea that could be a commercial item and give some return, that if it has an extremely long prospect of development, then most American companies are just not interested in them unless there is a short turnaround period. Is this a part of the criteria that you consider in the commercialization of some patent idea?

Mr. **Alexander**. I am not very familiar with that philosophy. I would say that it may be a factor, but in the case of 3M, I don't think the turnaround period as such is controlling. It is whether the product will be accepted by the public.

We have had many of them that take years to get out. We have spent billions of dollars. Of course, not every product we put on the market is successful. I think that I could say that 3M has 45,000 products, and one-quarter of them are replaced every 5 years. So, you see that a lot of them are not successful.

Mr. **Skeen**. So, time isn't necessarily an element of real consideration?

Mr. **Alexander**. It is one element of many, yes; but I don't think it has any controlling factor in commercialization.

One statement you made which may need some clarification is that you made the point about this large group of Government patents that aren't being used. You are not distinguishing between Government patents created by Government laboratories and patents created through contractors. There is a lot of difference.

Mr. **Skeen**. I apologize for not making that distinction, Mr. Alexander, but I certainly won't make that mistake again. I think that is a very valid point in this consideration.

Let me ask you, it is a policy of the Department of Defense that they, as you said, come to you with a problem and you do the R&D and you get the patent: What other agencies follow that policy?

Mr. **Alexander**. NASA is one. The Department of Energy is another. The National Institutes of Health also do that.

Mr. **Skeen**. But it is not a uniform policy among Government agencies, then?

Mr. **Alexander**. What is that?

Mr. **Skeen**. It is not a uniform policy of the Government that when they go to the private sector that they release the patent rights?

Mr. **Alexander**. No, each one has different standards. It is more uniform now than it was because we have this Presidential memorandum. That has improved things. However, as I said in my statement, I think Congress should step in and set the policies so that it will not be at the whim of an agency or at the politics of a particular administration. I think even though it has been said that maybe 80 percent of the time, now, the Government waives its title policy, that is beside the point really. We don't know what it is going to be like tomorrow. It could be back to the same way it was or worse.

Mr. **Skeen**. That is the kind of input that I personally like to have insofar as legislation dealing with this particular issue, because we tend to overreact many times. When you write legislation, you are tinkering, in my view, with something that generally works pretty well if you don't tinker with it. However, where you have a lack of uniformity in policy, then I think that comes closer to approaching what the real problem may be.

I want to ask you, is it your perception that there has been more commercialization done with products developed under, say, Department of Defense contracts, where they waive the patent rights, as opposed to those agencies that want to retain the patent rights?

Mr. **Alexander**. I can answer it this way: I don't know of any products that have been developed commercially where the Government did not waive. I admit that even in those cases where the Government has waived title, that not all of those inventions are made commercial.

Mr. **Skeen**. But I would think——

Mr. **Alexander**. Where the title is waived, the contractor can treat it like his own research and develop it and commercialize it, and so forth. He takes the risk. It may have a 50-percent chance or less of being successful, but at least he knows that if it is successful, his chances of getting lead time in the marketplace with the patent is going to help him get back his money and pay off not only the research work and the development work for that product, but for all the other unsuccessful products and perhaps some future products.

Mr. **Skeen**. Thank you, Mr. Alexander, and thank you very much, Mr. Chairman.

Mr. **Walgren**. Thank you, Mr. Skeen.

Mr. Valentine.

Mr. **Valentine**. Thank you, Mr. Chairman.

Mr. Alexander, did I understand you to say that the 3M Co. was involved with 45,000 products?

Mr. **Alexander**. Some of them are model changes, but that is the figure that they have given out.

Mr. **Valentine**. I am like my friend, Mr. Brown, some of this is new to me and you might have answered this before, but would there be anything, in your opinion, in existing law or in this proposed legislation to prevent a corporation from accepting a patent which was developed largely with tax funds, if they didn't have the capability to follow through and produce the product, to accept the patent rights from the Government and then sell those rights at a profit, thereby profit to that extent from efforts that were paid for by the Federal Government?

Mr. **Alexander**. I am not sure I understand the question. You are saying that if a contractor receives title to the invention but the invention is not commercialized by the company, they should sell it?

Mr. **Valentine**. Could they sell it?

Mr. **Alexander**. If they have title, they certainly could sell it, yes.

Mr. **Valentine**. Is there anything to prevent that corporation from accepting the patent, knowing full well that they did not intend to produce the product, and then turning around and selling it to some other company for a profit?

Mr. **Alexander**. You are talking about whether there is anything in this law that would prevent that?

Mr. **Valentine**. Yes, that would prohibit it.

Mr. **Alexander**. I guess I have never thought of it in that light, and I would have to——

Mr. **Valentine**. I am just asking for information, does that present any kind of problem? Do you think that is OK for that to follow? If the patent of the rights resulted from the use of tax funds, should the corporation be able not to produce the product but to profit from the use of the patent by selling it?

As I understand it, one of the problems that we are talking about is the development of progress that is not used. These patents are stored in a warehouse somewhere and they don't benefit anybody, and that progress was made as a result of the expenditure of tax funds. Does it present any kind of problem in your mind for the contractor to be able to get a patent, knowing that he didn't intend to do anything except sell it at a profit?

Mr. **Alexander**. I guess I don't see anything wrong in that. As I have said earlier, the Government came to the contractor to solve a problem, and the problem was solved and the Government got what it wanted. As part of the fee, if you want to call it that, for solving the problem, the contractor gets the patent. It shouldn't concern the Government what the contractor did with the patent, whether they utilized it commercially themselves or sold it to somebody and let them commercialize it. To me, that shouldn't make any difference. In fact, it would probably be preferable that they would sell it to somebody who would commercialize it if they couldn't do it.

Mr. VALENTINE. That would be better than its not being utilized at all.

Mr. ALEXANDER. Well, it would be, but normally, if the contractor can't commercialize it, nobody else is going to be able to either. It just stands to reason that they are the experts in that area, they have spent the time in research and development and they have the background. If they can't do it, in all probability, nobody else is going to be able to do it.

It is probably 1 out of 100 inventions that are made that are succsssfully commercialized even though we have patents on them. Not everything is commercialized. It just can't be done. Some things are put out on the market but aren't successful.

Mr. VALENTINE. Thank you.

Mr. WALGREN. Thank you, Mr. Valentine.

Let me ask, on a related subject, whether it is your experience that in the nonpatentable area, the effort of an agency like NASA through its technical briefs of getting interesting information out of its own sphere and in some written form is an area that the Government ought to be giving much greater attention to.

Mr. ALEXANDER. Yes, definitely. I understand they are doing this now in a very good way. Some corporations are loaning to the Federal laboratory employees who get trained in this area that the Government is so expert in and then those employees go back to the corporation with that training and develop products. It has been very difficult in the past to get the expertise that these Government laboratories have into the hands of private enterprise.

They have tried to do it by way of patents, and that just doesn't seem to work too well. They can't license them. People don't have interest in them because they don't know enough about the product or how that invention could be utilized in the corporation. If they have an employee go there, and work with the Government people in that area and get some of that experience, and then take it back to the corporation, it is a great way to transfer that information out to the public.

Mr. WALGREN. Thank you very much. We certainly appreciate your perspectives on that.

Let's turn now to Mr. Manbeck, who is the general patent counsel for the General Electric Co.

STATEMENT OF HARRY F. MANBECK, GENERAL PATENT COUNSEL, THE GENERAL ELECTRIC CO.

Mr. MANBECK. Thank you, Mr. Chairman. I apologize for not being here when you started, but I was told that I wouldn't be called before 10:30.

Mr. WALGREN. In that case, you are right on time.

Mr. MANBECK. Thank you, sir.

As you indicated, I am general patent counsel of the General Electric Co. General Electric is a large, diversified, technically based company which serves regularly as a contractor to the U.S. Government. In that role, it does considerable research and development work and it has a significant history of utilizing contract originated technology in commercial products. The rights afforded to Government contractors under contract originated inventions are therefore of importance to it, and we believe that the best overall patent policy for the Nation is one which will allow patents to serve as an incentive for the commercialization of contract-originated technology. H.R. 5003, if enacted into law, should have that effect for all classes of contractors.

The patent system is recognized as providing an important stimulus to industrial innovation. The protection afforded by patents encourages the investment of funds, not only in R&D, but also in product engineering and in the facilities needed to commercialize the results of the R&D output. It is this second point which is important in bringing contract originated technology to the commercial marketplace. Effective patent coverage provides encouragement to corporate managers, making them more willing to risk the private funds needed for engineering and manufacturing the new products.

Not all Government financed R&D provides a base for commercial products, but some of it does, and affording patent title to large contractors as well as the small contractors should help in the commercial effort. Experience has shown that the practice of permitting contractors to retain title to inventions made under Government contracts—the practice of the Department of Defense is the outstanding example that comes to mind—has helped create and provide products which are not only used throughout this country but also constitute a substantial export opportunity favorable to our balance of payments.

Let me give you an example taken from General Electric's own activities. Some years ago, under Government contracts, General Electric developed for the Air Force the TF39 engine, the first large, high-bypass, fan jet engine ever made, a true pioneering effort. In accordance with its practice, DOD retained a paid-up license and General Electric received title to the inventions it made. On that basis, General Electric invested very large sums to develop a civilian high-bypass engine based substantially on the TF39 and entered the commercial airliner propulsion market which until then had been virtually a one company market.

Further development supported by GE's private funds resulted in a family of engines which today power many of the world's jumbo jets. Also, the commercial engines have worked so well that the Air Force has purchased many aircraft using the commercial engines rather than the original military engines, and other commercialization programs have followed this one.

Obviously, there are more factors than just patents that go into a decision to invest a lot of money to create a new product, but there is no denying that, for American industry, the ownership of inventions and the patents that cover them is one of the important factors in a new product situation.

Patents add to the businessman's confidence that there will be a favorable commercial opportunity justifying the expenditures involved. They give him the ability to protect his company's investment. They permit him to engage in licensing and other cooperative relationships—and these relationships are an economic fact of life for many products—knowing that he can legally exercise control to prevent unrestricted use of his company's technology to its detriment.

This would not be so if his company didn't own the patent on such products, and the confidence and willingness of management to make the meaningful risk investment required to carry developments to the commercial stage could be affected. In short, big companies like General Electric need the protection of patents, often as much as small companies. Also, experience has shown that the contractor, again whether big or small, is by far the most likely entity to carry the results of Government funded R&D to the marketplace.

The desirability of allowing Government contractors to retain patent title has been recognized by others in the private sector besides the contractors themselves. A few years ago, the Research and Policy Committee of the Committee for Economic Development did a study and issued a statement on stimulating technological progress in this country. The Committee for Economic Development, or CED, is a nonprofit organization composed of 200 trustees, including many corporate executives and university presidents, and its statement was broadly directed toward improving the opportunity for technological progress in the United States.

Among other subjects, the statement treats the economic climate and its effect on innovation, tax policies for investment and innovation, and patents and the innovative process. As part of its suggestions dealing with needed improvements in the patent system, the CED statement deals specifically with Government contractor policy. I believe this part of the report is particularly apposite to the considerations involved in H.R. 5003, and therefore I will quote from it at this point. The title is "Government Contractor Policy."

"Until the 1970's, much if not most of such Federal funding was spent on military and space programs. In recent years, there has been a growing emphasis on development programs in other areas, such as energy. It is clearly in the national interest that the technology developed by Federal funding be made available for use by private industry in providing products and services for the general public. In many areas of Government, however, patent policies have been instituted either through statute or through agency rulemaking which seem to discourage commercialization of the results of federally funded research and development.

"Experience has shown that the company handling the Government contract is most likely to carry the results of Government-funded research and development to the marketplace. If the contractor must turn the rights back to the Government or if competitors can quickly copy the product, for example, by reverse engineering, without any patent deterrent, there is much less reason for the contractor to risk funds in commercialization. The same principle applies to the results of Government funded research and development done by nonprofit contractors such as universities.

Unless the universities get substantial rights from patents, there is absolutely no incentive for them to establish technology transfer and patent programs that may lead to commercialization of the research.

"To encourage the use of Government funded research and development for commercial products, contractors should, in most instances, receive title to the inventions and patents made under Government contract. However, the Government should be able to require the contractor to license others in certain circumstances, for example, if the contractor fails to produce enough products to supply the market."

I think it is clear that this analysis from the statement of the Committee for Economic Development is supportive of the present legislation.

I would note, however, that in one respect, the CED recommendation is different from the present bill. In section 303, the present bill provides for march-in rights, that is, licenses under reasonable terms, when "such action is necessary to meet requirements for public use specified by Federal regulation which are not reasonably satisfied by the contractor or his assignees or licensees." In this circumstance, the CED statement indicates that it might be best for the Government to take title. Its analysis states that if a regulatory agency funds a development and then adopts it as a national standard for commercial products, then it is desirable, in order to prevent economic dislocation, that all competitors receive the same royalty-free right to use the required technology or feature.

I have no idea how often this situation might occur, but I suspect not often. If it did, it seems to me that the agency could take care of it under the case-by-case exceptions permitted by section 301(a)(4) of the bill. I don't think this is a serious problem, but since I am bringing this CED statement to your attention, I do feel this difference should be pointed out.

In conclusion, we are convinced that a Government patent policy permitting all contractors to retain title to inventions made under Government contract, subject to suitable exceptions, is the most productive policy for the American public, and we support H.R. 5003 and its provisions in that regard.

I want to thank the subcommittee for giving us this opportunity to present our views.

[The prepared statement of Mr. Manbeck follows:]

TESTIMONY

of

HARRY F. MANBECK, JR.

General Patent Counsel

General Electric Company

on

H.R. 5003, The Uniform Science
and Technology Research and Development
Utilization Act

before

COMMITTEE ON SCIENCE AND TECHNOLOGY
SUBCOMMITEEE ON SCIENCE, RESEARCH AND TECHNOLOGY

UNITED STATES HOUSE OF REPRESENTATIVES

MAY 16, 1984

My name is Harry F. Manbeck, Jr., and I am General Patent Counsel of General Electric Company. General Electric is a large, diversified, technically based company which serves regularly as a contractor to the United States government. In that role, it does considerable research and development work and it has a significant history of utilizing contract originated technology in commercial products. The rights afforded to government contractors under contract originated inventions are therefore of importance to it, and we believe that the best overall patent policy for the nation is one which will allow patents to serve as an incentive for the commercialization of contract originated technology. H.R. 5003, if enacted into law, should have that effect for all classes of contractors.

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Not all Government financed R & D provides a base for commercial products. But some of it does and affording patent title to large contractors as well as the small contractors should help in the commercial effort. Experience has shown that the practice of permitting contractors to retain title to inventions made under Government contracts (the practice of the Department of Defense is the outstanding example that comes to mind) has helped create and provide products which are not only used throughout this country but also constitute a substantial export opportunity favorable to our balance of payments.

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Obviously, there are more factors than just patents that go into a decision to invest a lot of money to create a new product, but there is no denying that, for American industry, the ownership of inventions and the patents that cover them is one of the important factors in a new product situation. Patents add to the businessman's confidence that there will be a favorable commercial opportunity justifying the expenditures involved. They give him the ability to protect his company's investment. They permit him to engage in licensing and other cooperative relationships (and these relationships are an economic fact of life for many products) knowing that he can legally exercise control to prevent unrestricted use of his company's technology to its detriment.

This would not be so if his company didn't own the patent on such products, and the confidence and willingness of management to make the meaningful risk investment required to carry developments to the commercial stage could be affected. In short, big companies like General Electric need the protection of patents, often as much as small companies. Also, experience has shown that the contractor -- again whether big or small -- is by far the most likely entity to carry the results of Government-funded R & D to the marketplace.

The desirability of allowing Government contractors to retain patent title has been recognized by others in the private sector besides the contractors themselves. A few years ago the Research and Policy Committee of the Committee for Economic Development did a study and issued a Statement on Stimulating Technological Progress in this country. The Committee for Economic Development (CED) is a nonprofit organization composed of 200 trustees including many corporate executives and university presidents, and its Statement was broadly directed toward improving the opportunity for technological progress in the United States. Among other subjects the Statement treats the economic climate and its effect on innovation, tax policies for investment and innovation, and patents and the innovative process. As part of its suggestions dealing with needed improvements in the patent system, the CED Statement deals specifically with Government contractor policy. I believe this part of the report is particularly apposite to the considerations involved in H.R. 5003 and therefore I would like to quote from it at this point.

"GOVERNMENT CONTRACTOR POLICY

> "Until the 1970s, much (if not most) of such federal funding was spent on military and space programs. In recent years, there has been a growing emphasis on development programs in other areas, such as energy. It is clearly in the national interest that the technology developed by federal funding be made available for use by private industry in providing products and services for the general

public. In many areas of government, however, patent policies have been instituted either through statute or through agency rule making, which seem to discourage commercialization of the results of federally funded research and development.

"Experience has shown that the company handling the government contract is most likely to carry the results of government-funded research and development to the marketplace. If the contractor must turn the rights back to the government or if competitors can quickly copy the product (e.g., by reverse engineering) without any patent deterrent, there is much less reason for the contractor to risk funds in commercialization. The same principle applies to the results of government-funded research and development done by nonprofit contractors such as universities. Unless the universities get substantial rights from patents, there is absolutely no incentive for them to establish technology transfer and patent programs that may lead to commercialization of the research.

"To encourage the use of government-funded research and development for commercial products, contractors should, in most instances, receive title to the inventions and patents made under government contract. However, the government should be able to require the contractor to license others in certain circumstances (e.g., if the contractor fails to produce enough products to supply the market)."

This analysis from the Statement of the Committee for Economic Development thus is clearly supportive of the present legislation.

I would note, however, that in one respect the CED recommendation is different from the present bill. In section 303 the present bill provides for march-in rights, i.e., licenses under reasonable terms, when "such action is necessary to meet requirements for public use specified by Federal regulation which are not reasonably satisfied by the contractor or his assignees or licensees." In this circumstance the CED Statement indicates that it might be best for the Government to take title. Its analysis states that if a regulatory agency funds a development and then adopts it as a national standard for commercial products, then it is desirable, in order to prevent economic dislocation, that all competitors receive the same royalty free right to use the required technology or feature.

I have no idea how often this situation might occur, I suspect not often, and if it did it seems to me the agency could take care of it under the case by case exceptions permitted by section 301(a)(4) of the bill. I don't think this is a serious problem but since I am bringing the CED statement to your attention, I do feel that this difference should be pointed out.

In conclusion, we are convinced that a Government Patent Policy permitting all contractors to retain title to inventions made under government contract, subject to appropriate exceptions, is the most productive policy for the American public, and we support H.R. 5003 and its provisions in that regard. I want to thank the Subcommittee for giving us this opportunity to present our views.

BIOGRAPHICAL SKETCH

HARRY F. MANBECK, JR.

● BORN	June 26, 1926 Honesdale, Pennsylvania
● HOME ADDRESS	34 Old Easton Turnpike Weston, Connecticut 06883
● PERSONAL STATUS	Married, two children
● EDUCATION	Honesdale High School - 1943 B.S.E.E. Lehigh University - 1949 LL.B. University of Louisville - 1954
● BAR MEMBERSHIPS	Indiana Kentucky Massachusetts Court of Appeals, Federal Circuit
● MILITARY SERVICE	1944-1947 U.S. Army Signal Corps - discharged as Lieutenant

● WORK EXPERIENCE (all with General Electric Company)

1949-1950	Engineer training assignments - various locations
1951-1953	Patent Trainee - Schenectady, New York and Washington, DC
1953-1957	Patent Agent and Patent Attorney Louisville, Kentucky
1957-1969	Various patent management positions at GE's Component Products Division, Ft. Wayne, Indiana; Flight Propulsion Division, Lynn, Massachusetts; and Appliance and Television Group, Louisville, Kentucky
1970-Date	General Patent Counsel Fairfield, Connecticut

● Professional Associations & Activities	American Arbitration Association, Patent Advisory Committee (Chairman) American Bar Association, PT&C Section (Patent Division Chairman) American Patent Law Association Association of Corporate Patent Counsel (Past President) BNA PT&C Journal, Advisory Board Intellectual Property Owners, Inc. (Director) U.S. Chamber of Commerce, Council on Patents Trademarks and Copyrights

Mr. **Walgren**. Thank you very much, Mr. Manbeck.

We have a rollcall that we have to respond to. If the gentleman from California would like to pursue any questions that he has now, I will be back in 10 minutes.

Mr. **Brown** [acting chairman]. Perhaps I can elicit one response here. I make this as a friendly interrogator. I think we need this legislation, but we have to always look at the costs and benefits of any legislation. Obviously, it will be of benefit to the corporations. We now have to see if it will benefit the public or if there will be no undue costs to the public.

The argument is made that the corporations, in addition to the benefits that they get, will be inclined to be more willing to contract for Federal R&D, may do a better job, and may do it at a lesser price if they feel that they are going to reap the benefits of rewards in terms of patents on new development. It has likewise been contended, as you have contended, that this may be the best way to move a new patent into commercialization. These would both benefit the Government and the public.

Do you feel that these benefits to the public in terms of better or less cost contracts and improved commercialization are an adequate benefit to offset their loss in terms in right and title to a patent that they would otherwise have.

Mr. **Manbeck**. Mr. Brown, I guess I wouldn't be here unless I did believe that.

Mr. **Brown**. Can you quantify that? You obviously speak from a prejudiced position, and I am not saying that in a derogatory sense, but it would be held to be so in a court of law.

Mr. **Manbeck**. This is true. May I return to the aircraft engine example, because I think that is a good one. The military, over the years, has for national defense purposes funded a great deal of aircraft engine development. It has, in general, left title to the patents from those developments with the contractor. Several, at least, of these engines in recent years have then been carried by contractors with the investments of very substantial amounts of money, tens of millions of dollars, into the commercial marketplace with the result that there is increasing competition in the commercial marketplace across the whole field of commercial and business jet engines.

The public, I think, benefits substantially through the fact that the competition itself has led to better fuel rates which reduce the cost of flying the aircraft which enable the airline companies themselves to supply service at less cost. These engines are far more safe, far more reliable, than the engines of 30 years ago, and I don't think there is any question that there has been a public benefit and a substantial one.

Now, if I may go to the first part of the question, which is inducing the companies to take R&D contracts, there are indeed some companies, and I don't mean to say General Electric is one of them, who do not take R&D contracts because they are afraid of losing their technology to the Government if they do. However, some of these companies are very important, specialized companies. It is, I think, in the Government's interest to get them into the contractor mode or keep them in the contracting mode. So I do not think there is a detriment to the public. In fact, I think there is a substantial advantage, and I admit I speak from the contractors' viewpoint, to a contractor title policy.

If I may add one more word, Mr. Brown, about this CED report of which I spoke.

This committee is not just corporations; it is university people and everybody else.

Mr. **Brown**. Well, our record here, if we are going to solve the political problem of getting this thing through and I hope we can, is going to have to contain both anecdotal and statistical substantiation of the points that we are making here. Otherwise, we won't overcome the political barriers that are involved here. I would like to see them overcome, but I know from long experience it is the kind of questions that will be raised in the Judiciary Committee and on the floor in connection with a bill of this sort. I want to see the strongest possible case made for it.

Now, I will recess the hearing for 10 minutes. The chairman will return at that time, and he will continue with his questioning if you gentlemen can remain.

[Recess taken.]

Mr. **Walgren**. Let us come back to business.

I just wanted to cover with Mr. Manbeck the CED recommendation. As I understand it, the present bill provides for the granting of a license without regard to the patent when such action is necessary to meet the requirements for public use specified by Federal regulation which are not reasonably satisfied by the contractor or his licensees.

The CED would do what under those circumstances?

Mr. **Manbeck**. The CED addressed this circumstance where the agency has paid for a development which it then adopts as a national standard which everybody in the industry must then utilize or they can no longer compete. CED, in that circumstance, recommended that everybody in the industry should be allowed to compete on a royalty free basis, a paid up royalty basis. This actually could be accommodated under the present bill in that the agency is allowed, under special circumstances, to keep title. I think it is in 301(a)(4).

I think the difference is this, Mr. Walgren, we are saying that ordinarily, patent title is needed to urge or help the contractor toward commercialization. On the other hand, if the agency, by regulation, says you must do this to commercialize, in that instance, he is going to commercialize irrespective of patent title. CED was concerned that others in the industry, in that circumstance, be allowed to compete on the same basis as before. However, it is a very special situation, and I doubt if it would occur very often. I couldn't, myself, at this moment, name one such situation at all.

I told Mr. Brown that I have a copy of the complete report and recommendation of CED which I will be happy to leave with the subcommittee.

Mr. **Walgren**. We certainly would like to look at it and perhaps review it for inclusion in the record in its pertinent parts. (See appendix A.)

Do you feel that there is a danger in contractors routinely applying for exclusive licenses and proprietary rights in products simply to occupy that field even though they might not have the intent to pursue them?

Mr. **Manbeck**. I really don't. I think it is likely that, as the research and development is done, at least in the fields that I am familiar with, the contractors will request title. They probably will file patent applications because sometimes you don't know for several years, maybe 6 or 7 years, whether or not you are going to be able to commercialize. I think the request for title will not be on the thought that we are going to try to get something and put it on the shelf. It will be more that we don't know right now whether this item will go commercial.

When the decision is made to go commercial or not to go commercial, if the decision is no, it is possible that there is a patent standing there in the contractor's name which he isn't using. In that circumstance, I think it is very desirable that there be march-in rights in the bill, which there are, to allow the agency to require him to license. However, I really view this as a concern which is a reasonable concern but yet one which is not factually justified.

I will tell you from many years of experience that if the product that a company develops is not good enough, there isn't enough commercial incentive for that company to bring it out, almost never does somebody else pick up the patent and use it. We did a study one time to find out how many of our patents we commercialize, and it is about half. We routinely put most of our unused patents on the Federal Register, the register of the Patent Office, as being available for licensing. We just never get requests for licenses under those. If the fellow that develops it doesn't bring it out, nobody is going to, in my personal experience.

Mr. **Walgren**. I see.

H.R. 5003 contains requirements that the patent applications be filed within a reasonable time. How should that time be determined? When does the clock start to run? And how long a period should that be?

Mr. **Manbeck**. I think that will necessarily vary from industry to industry and also from one situation to another. Generally, you do not like to file a patent application until you are sure really that you have developed the concept or invention to a practical stage and know what you are doing. Part of the reason is that you don't want to file and then have to refile which has a bad effect or can have a bad effect on your foreign patents. Also, it simply costs money to file patent applications, and you want to have your concepts well in mind and know they are practical before you go ahead.

I think the reasonableness has to be considered on a case-by-case basis, looking how far the contractor is along his development program, whether he has tested the item, whether the item has been delivered to the Government. I would be very reluctant to say one is enough or 2 years are enough or 3 years are too much. You can't quantify it to that extent.

Mr. **Walgren**. Thank you very much. We certainly appreciate your views and your making yourself available to the committee.

Let's now turn to Dr. Hudis who is the assistant director at Brookhaven National Laboratory. Thank you for coming. I apologize for the delays and interruptions, but we look forward to your testimony.

STATEMENT OF DR. JERRY HUDIS, ASSISTANT DIRECTOR, BROOKHAVEN NATIONAL LABORATORY

Dr. HUDIS. Thank you, Mr. Chairman. I welcome this opportunity to speak to the committee, and I speak in support of H.R. 5003. I can do this best, perhaps, by telling you a little bit about Brookhaven, what we do, how technology transfer comes into play at a national laborabory, and the difficulties we have had, and how we think H.R. 5003 would assist us in our technology transfer efforts.

Brookhaven is a multiprogram laboratory operated by Associated Universities Inc. under contract with the Department of Energy. We are a GOCO, a Government-Owned Contractor-Operated laboratory. The contractor, Associated Universities Inc., was set up by nine large eastern universities specifically for the purpose of running Brookhaven National Laboratory. Since then, they have also taken on the responsibility of being the contractor for the National Radio Astronomy Laboratory.

The major mission of our laboratory is to conceive, build, operate and do research on large, complex, experimental facilities such as particle accelerators, nuclear reactors, and, most recently, our newest facility, the National Synchrotron Light Source. On all of these machines, as well as many smaller ones around the laboratory, we support not only the research of our own staff, but also the R&D effort of a broad-based national community of scientists from universities, from other laboratories, and from industry.

We believe that an important part of our technology transfer efforts is to increase the usefulness of these large machines to the industrial community. Because of the recent changes in law and in practice, practice which usually includes waivers from the Department of Energy, we are now able to operate a simple two-tiered system for our industrial colleagues. If industrial researchers desire to carry out academic type research, we treat them exactly like we do other academics. By this we mean that they are willing to publish their results in the open literature. Being treated like other academics means they do not have to pay for time on the designated user facility, and the scientist signs the BNL patent agreement which assigns all rights to the U.S. Government.

On the other hand, if the industrial scientists wish to carry out proprietary research, their firm must pay our published full cost recovery rate covering such research, and the firm is then permitted to take title to all inventions that result from their labors. The Government, of course, retains the license to use that technology developed at the Laboratory. The system works well, and we now have many industrial researchers working under both modes. Interestingly and sadly, the greatest single remaining barrier to our transfer of laboratory developed technology to the commercial sector is associated with the licensing of rights to inventions made by our own staff of scientists and engineers. We have had only modest success in this endeavor, and it is this weakness, a weakness which we believe is inherent to the present system, which is addressed by the bill under consideration today.

Let me tell you why this takes place. Under the present contract between DOE and AUI which governs the operation of Brookhaven, DOE takes title to all inventions made by Brookhaven scientists. Over the last 4 fiscal years, 1980 through 1983, Brookhaven has filed 83 patent applications for inventions made at the Laboratory. DOE has not granted one exclusive license to private industry under any of this technology, and that is not because industry has not been interested. I have some backup material which has been submitted for the record. This is despite the fact that recent congressional hearings in the area of utilization of Government-developed technology have established the necessity of providing industry with an exclusive market position as an incentive necessary for them to undertake the commercialization effort.

To relieve the situation, we believe that if instead of assignment to the Government, assignment of title went to the contractor, it would greatly improve our ability to transfer the discoveries and inventions of BNL staff to the commercial sector for the following four reasons:

(1) We would have closer interaction between the inventor and the interested commercial party. This interaction, from the very beginning of the technology transfer process, would open up the possibility of additional development work when needed, and, as you have heard today, it is almost always needed. This additional development work could be done in a number of ways. It could be done through a joint venture with the Laboratory. It would be done by engaging the Laboratory scientist as a consultant, or it could be done through hiring of the scientist away from the Laboratory. We don't always approve of that last way of doing business, but it has happened before and I am sure it will happen again and it is not all bad.

(2) Our staff would have much greater interest in pushing for commercialization. I think that is probably one of the most important points. There would be great personal and institutional satisfaction in seeing a viable end product result from our efforts. Even people who do basic research like to see some viable end product resulting from their efforts.

(3) Operationally, we would have greater freedom in making some very important and difficult decisions, such as a decision as to whether we feel an exclusive license is needed to move the product into the marketplace. If more than one firm is interested in getting an exclusive license, which should be chosen and how? Theoretically, as we all know, this is possible for the Government to do. However, as we also all know, it has not been easy in practice.

(4) We believe that we would get a much better response from industry. They would now have to work with only a single, non-Government entity which could reach equitable decisions and, perhaps as importantly, could reach them in the timeframe essential if the company is to make the technology commercially attractive and competitive. The long time periods which DOE has been taking have been one of the greatest barriers to companies' getting rights from the Government.

To summarize these four points, it seems quite clear to us that our ability to transfer technology developed at Brookhaven to the private sector would be greatly enhanced if we had the option to take title to our own inventions. This option would permit those who are most familiar with the technology and with the areas of its possible application to deal directly with interested industry and to make the prudent decisions required to choose the best path to commercialization.

I would like to offer two specific comments on the language of H.R. 5003. The Senate bill, S. 2171, contains a provision at section 215(d) which provides that inventor awards to stimulate invention reporting are allowable contract costs. Brookhaven has had such an award system in effect successfully for some time, and we would recommend that a provision similar to that found in the Senate bill also be incorporated in the House version so that there is no question as to the validity of such a program.

The second difference between the two bills is a provision in H.R. 5003, section 301, which is lacking in S. 2171. That provision specifies that all net income earned by the GOCO contractor from an invention be used for more scientific R&D at the facility. I speak as an administrator at the Laboratory, not as the contractor, and therefore, I am naturally in favor of such a provision, and our contractor is also in favor of it. I believe that such a provision is a worthwhile goal to pursue and I favor its inclusion.

In summary, let me say that over the past 3 years, there have been many committees on the national level reviewing national laboratories, especially multiprogram national laboratories, the Packard committee, the Grace committee, and the ERAB committees. If there is one thing that all of these committees seem to agree upon, it is the fact that the kind of research that should be supported at national laboratories is long-term, high-risk, but with the possibility of high payoff research, is that kind of effort which should be supported at national laboratories. This is exactly the kind of research effort, when it does result in inventions, usually results in inventions which are quite far from the marketplace. This is why we feel that it is quite important for us to have the ability to attract companies which are willing to enter into the additional R&D which is necessary to carry these inventions from the patent itself to the marketplace. To do this, I repeat, most of them feel—and mostly we have dealt with small companies who are interested—that they need exclusive licensing. We feel that we could do that better than it has been done through the Department of Energy and other agencies of the Government.

That concludes my statement, Mr. Chairman, and I thank you for this opportunity.

[The prepared statement, plus attachments of Dr. Hudis follow:]

BROOKHAVEN NATIONAL LABORATORY
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May 11, 1984

Representative Doug Walgren
Chairman, Subcommittee on Science,
Research and Technology
U. S. House of Representatives
Suite 2321 Rayburn House Office Bldg.
Washington, D.C. 20515

Dear Representative Walgren:

Brookhaven National Laboratory welcomes the opportunity, as a representative of the Department of Energy's multi-program National Laboratories, to testify before your Subcommittee during its consideration of H.R. 5003, the "Uniform Science and Technology Research and Development Utilization Act". The Laboratory strongly supports the aims of this bill and strongly supports the premise on which this bill is founded, that is that leaving title in inventions to the research entity where the inventions were made greatly enhances the opportunities for transfer of this technology to the private sector and ultimate commercialization of this technology to the public benefit.

I am pleased to have the opportunity to present oral testimony before your subcommittee. In addition, the Laboratory has assembled the enclosed package of written testimony which investigates in more depth some of the points I will consider during my address to your subcommittee.

Thank you for the opportunity of letting Brookhaven represent these views concerning what we perceive as the positive impact that passage of H.R. 5003 would have on our technology transfer efforts.

Very truly yours,

Hudis

Dr. Jerome Hudis
Assistant Director

JH:MCB:am
Enclosure

TESTIMONY BEFORE THE HOUSE COMMITTEE ON SCIENCE AND TECHNOLOGY

SUBCOMMITTEE ON SCIENCE, RESEARCH AND TECHNOLOGY

Subject: H.R.5003 - "Uniform Science and Technology Research and Development Utilization Act

Hearing Date: Wednesday, May 16, 1984

Brookhaven National Laboratory
Associated Universities, Inc.
Upton, Long Island, New York 11973

Brookhaven National Laboratory welcomes the opportunity to share with the House Committee on Science and Technology, Subcommittee on Science, Research and Technology, its views concerning the present successes and failures it is experiencing in its technology transfer efforts, with specific attention to the positive impact we project would result from passage of H.R. 5003.

Brookhaven National Laboratory is operated by Associated Universities, Inc. (AUI) under a contract with the United States Department of Energy (DOE). The Laboratory conducts a broad range of basic and applied research programs in the physical and life sciences. The primary objectives of the Laboratory are:

- To seek new scientific knowledge, with emphasis on programs that require large-scale research tools such as particle accelerators, nuclear reactors, and special laboratories that are beyond the scope of individual educational institutions.
- To encourage use of its facilities by scientists from universities, research institutions, and industry.
- To assist DOE in the performance of tasks that utilize the Laboratory's unique facilities and organization or the special talents of its staff.
- To serve as an important auxiliary in the training of scientists and engineers, and otherwise to assist in the dissemination of scientific and technical knowledge.

The diversified research program at the Laboratory is carried out in nine distinct but inter-related departments: the Accelerator Department which is the focal point of the high energy research programs and which operates the Alternating Gradient Synchrotron; the Physics Department, which conducts research in the fields of nuclear physics, supported by facilities such as the Laboratory's tandem accelerators and high flux beam reactor, solid state physics, and atomic physics; the National Synchrotron Light Source Department; the Chemistry Department, which has a large research program in the field of radio-labeled pharmaceuticals made possible by the Laboratory's cyclotron facilities; the Medical Department, which has an active nuclear medicine program which makes use of the Laboratory's medical reactor and an isotope preparation program which uses the Laboratory's linear accelerator; the Biology Department, which is actively engaged in genetic engineering research and has an active group working at our Scanning Transmission Electron Microscope; the Department of Applied Science, which conducts research in the fields of energy sciences, environmental sciences, and materials sciences; the Department of Nuclear Energy, which works in areas such as nuclear safety, nuclear waste management, nuclear material safeguards, and advanced reactor systems; and the Applied Mathematics Department.

It is obvious that a laboratory like Brookhaven, with such a vast and diversified basic and applied research program, has many different avenues to follow in disseminating the results of the research it conducts and in transferring the technology and expertise it develops. Publication in scientific journals or presentation at professional meetings is one avenue consistently used by the Laboratory. Approximately 3,700 papers appeared from the research laboratories within Brookhaven during fiscal years 1982 - 1983. Our scientists often are asked to share their expertise with private industry by acting as consultants to the private sector. In fiscal year 1983, approximately 20 consulting arrangements were approved by the Laboratory which involved Laboratory personnel performing consulting work for third parties. The Laboratory has always been an attractive site for academic researchers, researchers from federal laboratories or national laboratories, and to a lesser extent researchers from industry, to spend their sabaticals or time available to them for advanced research. Approximately 2,600 visiting scientists conducted research at the Laboratory during fiscal years 1982 - 1983. These statistics show that the Laboratory has been very successful in pursuing these avenues of technology transfer.

As is apparent from the above discussion of the different research programs conducted at Brookhaven, the major mission of the Laboratory is to conceive, build, operate and perform research upon large, complex experimental facilities such as particle accelerators like our Alternating Gradient Synchrotron, our High Flux Beam Reactor, and on our new machine, the National Synchrotron Light Source, which has sources of both vacuum ultraviolet and x-ray radiation. On all of these machines, as well as our smaller ones, we support the R&D efforts of a national community of scientists and we do everything we can to encourage and increase their use. We have always been very successful in attracting university scientists and researchers from other national laboratories and, as a matter of fact, we have always had a small component of researchers from industrial laboratories, many of them in residence at the Laboratory for some length of time.

We believe that an important component of our technology transfer program is to expand the usefulness of these large research devices to the industrial community. In the last few years, scientists from the industrial community have been encouraged to make greater use of the facilities and the expertise at the Laboratory. There are several reasons for this. First, we have built some facilities, like the National Synchrotron Light Source, which have many applications which are of very great interest to industrial researchers. Second, in the last few years there have been a number of changes, both in law and in practice, which have removed some restrictions facing the industrial community in using the facilities of the national laboratories.

Industrial researchers doing basic research at our facilities, the results of which will be published in the open literature, have the same access to the facilities as university researchers. If industrial researchers on the other hand, wish to use our facilities to do proprietary work, this is also possible through use of the Class

Waiver issued in 1982 by the U. S. Department of Energy. In such cases, we first determine that the industry research is a reasonable thing to do at the facility, and then we publish a full cost recovery rate covering such research. If the industrial firm pays this full cost recovery, they are entitled to the benefits of the class waiver which allows them to take title to all inventions that result from the research conducted at Brookhaven. The Government, of course, retains a license to use the technology for Government purposes.

These operating procedures have been extraordinarily successful in attracting industrial scientists to our facilities in the last few years. For example, in one of our major user facilities, the National Synchrotron Light Source, scientific groups from prestigious industrial laboratories such as Bell Labs, IBM, Exxon, Mobil, and Allied Corporation are active participants in the ongoing research efforts. The extent of this interest can be judged in part by the fact that of the approximately 15 million dollars in equipment which was invested in the beam lines, the experimental facilities around the accelerator, a full one third of that investment has been made by the industrial community and of that approximately 5 million dollars, ownership of equipment valued at more than one million dollars has already been transferred from the industrial users to DOE.

Passage of the Class Waiver by DOE also opened up another technology transfer path that is attractive to industry. It permits Brookhaven, and the other DOE national laboratories, to conduct proprietary research programs on behalf of industrial sponsors. DOE must first approve the conduct of such research at the Laboratory to insure that there is no interference with the DOE programs. Then, if the industrial sponsor pays full cost recovery, it is entitled to the benefits of the Class Waiver which provides it with title to any inventions made during the course of the work funded at Brookhaven. Educating the industrial community of this possibility has been a slow process but we are now beginning to see increased industrial interaction with our scientific staff which has resulted, over the last 14 months, in thirteen industry sponsored proprietary research programs at the Laboratory, at a total funding level of $2,068,177.

Clearly, in the areas of dissemination of scientific information, use of Brookhaven facilities by academic and industrial scientists, sharing of Brookhaven personnel expertise through consulting arrangements, and use of Brookhaven facilities and personnel for proprietary research, DOE, Associated Universities, Inc. and Brookhaven as a team are very successful. There is no question, all of these routes are extremely important avenues of technology transfer.

However, there is one critical flaw in our technology transfer effort. The greatest barrier we face involves the difficulty we consistently experience in encouraging the development and use by industry of inventions and processes which result directly from the work of our own scientific and engineering staff. In other words, we have experienced very little success in transferring discrete inventions developed at Brookhaven to the private sector. Since Brookhaven is a basic research laboratory and not in the business of manufacturing and marketing products, the public will never benefit from new products or new technologies developed at the Laboratory unless we can successfully interest private industry in picking up that technology and commercializing it. It is this one glaring weakness in our technology transfer ability that is addressed and corrected by the bill being considered at today's hearings.

Under the present contract between DOE and AUI which governs the operation of Brookhaven, DOE takes title to all inventions made by Brookhaven scientists. Over the last four fiscal years (1980 - 1983), 181 invention disclosures were submitted to DOE from Brookhaven; of these 181 inventions, 83 are or will be the subject of U. S patent applications. DOE has not granted one exclusive license to private industry under any of this technology or as a matter of fact under any earlier work developed at the Laboratory. The Congressional hearings that led to the passage of Public Law 96-517 (Dole-Bayh) and Public Law 96-480 (Stevenson-Wydler) certainly established the importance of exclusivity in concluding that the public only benefits from an invention after industry develops, manufactures and markets it, and industry will only make the necessary investment if it is certain that its market position is insured through ownership or licensing of patent rights covering the invention.

Although in theory the exclusive licensing ability does exist for DOE, in practice it is not a viable method to transfer technology to the private sector. To begin, it is DOE's philosophy that they will grant exclusive licenses only as a last resort. As one consequence of this they have interpreted the licensing provisions of P.L. 96-517 as providing that an exclusive license cannot be granted if another firm applies for a non-exclusive license under the same patent or patent application. In the only instance where a company interested in Brookhaven technology has gone through the time consuming process of applying to DOE for an exclusive license, this petition was dismissed by DOE when a second firm applied for a non-exclusive license. Apparently, the first firm has lost interest in this technology after being informed that they would not receive an exclusive license, and we do not know if the non-exclusive licensee will attempt to develop the invention.

Equally significant however, is the fact that the complicated and time consuming procedures established to implement the licensing provisions of P.L. 96-517 discourage most industrial firms before they even seriously consider petitioning DOE for an exclusive license. A few examples from our recent experience might illustrate this:

1. Furfuryl alcohol polymer concrete product developed at Brookhaven - covered by U. S. Patent 4,361,670 issued 11/30/82 - five companies expressed serious interest in this technology until we provided them with in depth information on the licensing regulations - not one firm applied to DOE for a license - all indicated they would have been interested in negotiating a license arrangement with Brookhaven directly but did not want to get involved with DOE's procedures - all indicated that even if they could overcome their management's resistance to negotiate a license with the government, they could not afford the lengthy time delay that would be involved before DOE could reach a decision on whether or not to grant a license.

2. Hydrocarbon catalysts developed at Brookhaven - U. S. Patent 4,396,539 issued 8/2/83 - one firm expressed interest - same results as above.

3. Baseband digital data communications network developed at Brookhaven, U. S. patent application S.N. 443,982 filed 11/[illegible]3/82 - two firms expressed interest - same results as above.

4. Flat plate solar collector developed at Brookhaven - U. S. Patent 4,327,707 issued 5/4/82 - three firms expressed interest - same results as above.

5. Magnesium phosphate glass cements developed at Brookhaven, U. S. Patent 4,436,555 issued 3/13/84 - four firms expressed interest - same results as above.

Needless to say, the above type of experience is extremely discouraging to the Laboratory and certainly does not foster enthusiasm among Laboratory personnel for this avenue of technology transfer. Our experience, and that of the other DOE laboratories, also leads us to conclude that a case by case waiver approach is not feasible because of time delays and uncertainty in outcome. We do not envision that the national laboratories could use DOE's waiver regulations to bring about the transfer of title in inventions from DOE to the contractor operating the Laboratory. Brookhaven has had only limited experience trying to make use of these regulations. A peptide affinity label for thrombin was developed in our Biology Department. In December 1979 Brookhaven petitioned DOE to waive title to this invention; in March 1982 U. S. Patent 4,318,904 issued on this invention; in April 1982 DOE finally granted the waiver to Brookhaven, but with an indication that the waiver had only been granted because Brookhaven had worked with Research Corporation on this case. Such an inordinate time delay could in itself destroy the commercial value of many inventions.

Thus, to summarize, the difficult and time-consuming process of acquiring from DOE a license, with protection sufficient to warrant the company's investing in the development and marketing efforts needed to convert the invention to a viable commercial product, has usually turned even venturous companies away from the Laboratory's inventions.

Another difficulty in trying to transfer inventions developed at Brookhaven to the private sector is based on the fact that we are mainly a basic research laboratory and the unique inventions and processes developed at the Laboratory tend to need appreciable amounts of development work even before it becomes apparent that these inventions may be commercially interesting; interesting enough to warrant the investment of the large amounts of money, time and expertise required to go from something on a shop bench or from an experimentor's laboratory to a production item or process. With no special driving force to undertake at least some preliminary development work the inventor on the laboratory staff usually turns to new and different experiments. The experimental results are published, the invention patented, and in theory it becomes available to all interested parties. But it is really of no great interest to commerce because it is still at such an early stage that it is not really clear that it warrants the investment to develop a product. If, as would be provided by the current bill, the Laboratory could control the disposition of rights to the invention, there would be this incentive for laboratory personnel to do the additional developmental work that would get the technology to the stage that it could be picked up by industry.

Recently, the national laboratories have been the subject of two in depth reviews, the Report of the White House Science Council (the Packard Report) issued May 1983, and the Report of the Multiprogram Laboratory Panel of the Energy Research Advisory Board, (ERAB), which dealt only with the DOE national laboratories, issued September 1982. Both groups considered in the review of the laboratories the question of the effectiveness of the laboratories' technology transfer capabilities, and both concluded that regulatory and policy changes in the patent field had to be made in order for the technology transfer effort to be successful. The following quote from the ERAB Report is germaine to a consideration of the problems we have addressed above and the solution offered by S.2171:

> "The Department's (DOE's) patent policy, ... has been among the salient barriers to cooperative relationships with industry and to effective technology transfers." page 7-8 of the Final Report.

Apparently in response to these findings, DOE hosted a meeting in February 1983 to investigate the laboratories' technology transfer efforts and the laboratories' recommendations for changes in DOE policies and regulations that would improve the transfer climate. We have attached to this testimony a copy of the formal submission we made to DOE in advance of this meeting (Samios letter of 2/1/83 to Decker). You will note from this letter that as early as April 1982 Brookhaven had formally approached DOE with a request that its prime contract be amended, as was possible after passage of P.L. 96-517, to permit the Laboratory to retain title to its inventions. Our letter of 2/1/83 to DOE voices our concerns over the effect of title left in DOE and expresses our opinion that many of these concerns would be overcome by leaving title in the laboratory.

Also attached to this testimony is our letter of April 4, 1983 (Bogosian to Decker) which followed the DOE meeting and in which we again discuss the ownership of inventions issue. The final attachment to this letter is a summary sheet that was prepared by Battelle's Pacific Northwest Laboratory and which outlines the responses submitted to DOE from all the DOE national laboratories in preparation for the February 1983 meeting. This summary sheet clearly shows that in addition to Brookhaven, a number of the other national laboratories, including Los Alamos National Laboratory, Stanford Linear Accelerator, and Lawrence Berkeley Laboratory, endorsed ownership of inventions by the contractor and almost all the respondents identified DOE ownership of inventions as an impediment to technology transfer.

Brookhaven is well aware of the sharp increase in the patenting and licensing of technology by universities that has followed passage of P.L. 96-517. We understand that approximately one third of university held patents are now licensed. The universities have been successful in establishing technology transfer offices and industry seems comfortable dealing with these offices rather than having to go through the bureaucratic maze of dealing with the government agency that originally funded the research. We anticipate similar results if title was left in the contractors operating the national laboratories.

There is one provision in H.R. 5003, not found in the companion bill S.2171 that has been introduced in the Senate, which Brookhaven considers especially important for Government owned, contractor operated (GOCO) Laboratories like itself. This provision, set forth in Section 301 (c)(6), requires that the patent rights clause that would be incorporated into the contract between the federal agency, in Brookhaven's case the U. S. Department of Energy, and the contractor, in Brookhaven's case Associated Universities, Inc., would require that the balance of any royalties or income earned on inventions made under the contract would after payment of expenses be used solely for scientific research and development programs at the Laboratory consistent with the mission and objectives of the Laboratory. It is our philosophy that income generated from the commercialization of inventions made or developed at Brookhaven should be poured back into supporting future research at the Laboratory and thus we would favor a provision in our Prime Contract that would require such use of invention-generated income.

In conclusion, we believe that we can greatly improve our technology transfer posture with respect to technology developed at the Laboratory if title to such work was left in the Laboratory. This aim would be accomplished by passage of H.R. 5003. We support the bill for the following reasons:

- There would be closer interaction between the inventor and the interested commercial party. This interaction from the very beginning would open up the possibility of additional development work either through a joint venture with the Laboratory or by hiring the inventor away from the Laboratory or by using the scientist as a consultant. Collaborative research permits cross fertilization between laboratory and industry scientists which results in a new vitality in our research programs.

- Our staff would have greater interest in pushing for commercialization, because of a greater personal and institutional satisfaction in seeing a viable end product result from our efforts and perhaps even obtaining some financial returns from such a venture, although we firmly believe that financial return is secondary and that pride and the satisfaction of seeing Laboratory developed technology available to the public are more important. Having a stronger interest and having the ability to do something about it would improve our ability to transfer technology. The Laboratory would then have the incentive to devote resources to develop a licensing capability because it would have the ability to dispose of rights in its inventions through licensing.

- Operationally we would have greater freedom in making some very important and difficult decisions. For example, the decisions as to whether in our judgment an exclusive license is needed to move the product into the marketplace and as to which of the competing groups should receive the exclusive license are necessary. Theoretically these decisions can be made by the government, but in practice they are difficult and time consuming, and often are never made. We feel that we could make such decisions intelligently and in a timely fashion.

- Finally, we believe that we would receive much better responses from industry since they would now have to work with only a single non-government entity that could reach equitable decisions and implement such decisions within the time frame essential to industry to make the technology commercially attractive and viable.

As we indicated at the outset of this testimony, we welcome the opportunity to testify on behalf of passage of H.R. 5003 before the House Committee on Science and Technology, Subcommittee on Science, Research and Technology.

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Office of the Director

February 1, 1983

Mr. James Decker
Office of Energy Research
Mail Stop 3F-032
Department of Energy
Washington, D.C. 20585

Dear Mr. Decker:

I am writing to you in response to Dr. Alvin Trivelpiece's letter of January 12, 1983. At Brookhaven, we have been exploring for some time the different factors that impact upon our ability to interest business concerns in the innovative research undertaken at the Laboratory. We are, therefore, encouraged to note that DOE is also considering this situation, with special emphasis on the impact of the Department's patent policy, and we are pleased to offer comments on the questions posed in Dr. Trivelpiece's letter. It is our hope that our remarks will prove helpful to DOE as it works towards creating a climate that will improve technology transfer capabilities from the DOE national laboratories to industry.

Following passage of the Stevenson-Wydler Act (Public Law 96-480) and issuance of DOE Order 5200.1, Brookhaven established a formal technology transfer program through its Office of Research and Technology Applications (ORTA). The manager of Brookhaven's ORTA reports directly to the Laboratory's Assistant Director for Scientific Policy and Planning. This organizational location provides the technology transfer office with visibility and with direct access to my office and to my associate directors. Our ORTA also receives direct support and guidance from the Laboratory's Patent Counsel.

The technology transfer office maintains close contact with the research programs at the Laboratory through a laboratory-wide technology transfer committee, which is composed of one or more senior representatives from each research department (in many instances the Department Chairman) the Laboratory's Patent Counsel, and the manager of our ORTA. This committee identifies potentially transferrable technology. An application assessment package is then prepared on each such identified area of technology, following the guidelines in the above-referenced DOE Order. This package is then forwarded to TIC and to NTIS. At the same time a summary of the assessment is distributed to appropriate trade journals and interested research managers in industry and academic research.

When appropriate, technical assistance is provided by Brookhaven through the technology transfer office to state and local government officials. Our ORTA also cooperates with and participates in other organizations that link laboratory R & D to potential users in the private sector and state and local government. Contact has been established with technology transfer brokers and the Laboratory is an active member of the Federal Laboratory Consortium. Plans are underway to host an Innovators Workshop to be sponsored by the Long Island Forum for Technology next September and to prepare a program for members of the Industrial Research Institute.

With respect to the second question posed in Dr. Trivelpiece's letter, we do not know of any way to calculate even an estimate of what we could have collected in royalties over the past ten years. Since DOE retains title to all Brookhaven inventions, and since the regulations that now permit DOE to grant exclusive, royalty bearing licenses to government owned patents have only been in effect since July, 1981, we have no experience in either licensing technology which the Laboratory owns or receiving royalties through a DOE granted exclusive license. In fact, it should be noted that the new exclusive licensing regulations do not contain any mechanism for returning a portion of the royalty income to the laboratory where the technology was developed. Although we cannot give a meaningful estimate on possible income the Laboratory could have had if the government's patent policy had been different over the past ten years, we can point to examples of innovations developed at Brookhaven that have recognized commercial potential. For instance, a red blood cell labelling kit was developed by our Medical Department. This kit is used with approximately 18,000 patients each year in the U. S. by clinical investigators under their Investigational New Drug Applications. A patent was issued to DOE on this product in 1976. However, since it was not possible until recently to get an exclusive position under this patent, no U. S. pharmaceutical firm has applied to FDA for a New Drug Application on the kit. An approved NDA would be necessary before the kit could be marketed here.

I have chosen to group questions three and five in Dr. Trivelpiece's letter together in my response because from our viewpoint they really address the same fundamental concern. When we are dealing with a new field of technology developed at Brookhaven, the most significant impediment we face when we try to interest industrial concerns in performing the additional R & D work needed for commercialization, or in undertaking the marketing studies needed to launch a new product, or in obtaining regulatory agency approval if such is required prior to marketing, is that the technology under consideration is owned by DOE, not by Brookhaven National Laboratory. Many industrial concerns, having experience in the past with the lack of any coherent, government wide patent policy and with the endless delays that were often the norm whenever they requested any type of waiver of government rights, simply refuse to even deal with us on questions of technology transfer. Other firms express an interest in our technology, but are deeply concerned about their ability to obtain exclusive rights from DOE under the exclusive licensing regulations. They are concerned about the long period of time required by the publication provisions of the regulations before DOE can act upon such a licensing request, and they are concerned about the criteria that the government will use in deciding whether or not to grant such a request. They are reluctant to base future product development plans in part on the ever changing political climate that is a fact of life in any federal agency. In most instances, industrial representatives have indicated to us that they would be far more interested in attempting to commercialize Brookhaven technology if title to this technology rested in the Laboratory, so that they could deal directly with the Laboratory concerning questions of licensing.

Thus, we see DOE's retention of title to inventions made at the Laboratory as a significant impediment to our being able to transfer this technology to the private sector. It is our opinion that we could structure a far more effective technology transfer program if we had the option to retain title to inventions made at the Laboratory.

Public Law 96-517 gives universities, non-profit scientific organizations and small businesses the right to elect to retain title to any inventions which they develop in the performance of research under a government funding agreement. Section 202 of the law provides that the funding agency may decide not to apply the provisions of the new law to funding agreements that are for the operation of a government owned research facility. As you are aware, DOE made the policy decision not to apply this new law to any of its national laboratories. At the time this decision was made, we informally discussed with members of DOE's Office of Patent Counsel our concerns about the ramifications of this decision on our ability to interact with industry. Then in 1982, as part of the package we submitted to DOE while we were renegotiating our prime contract covering the operation of the Laboratory for the next five years, we formally petitioned DOE to incorporate the provisions of Public Law 96-517 into our contract, thereby giving the Laboratory the option to retain title to inventions. I have enclosed a copy of the April 9, 1982, letter from our Patent Counsel to DOE's Chicago Operations Office summarizing our presentation to DOE on this point. DOE's Office of Patent Counsel rejected our petition, and our new prime contract contains the same government retention of title provisions.

Because of the DOE policy not to apply Public Law 96-517 to its national laboratories, we followed with interest the consideration given in

Congress last year to the bill introduced into the Senate by former Senator Harrison Schmitt of New Mexico (S-1657). This bill in part would give the contractor who operated a government owned contractor operated (GOCO) facility the right to retain title to inventions developed by GOCO personnel. It is our opinion that passage of a bill substantially the same as S-1657 would enable Brookhaven and the other national laboratories to work much more effectively with industry to accomplish the goal of commercialization of laboratory technology.

We think it is important to keep in mind the Congressional findings concerning the administration of government owned patents that led to the passage of Public Law 96-517 and the Stevenson-Wydler Act and led to the introduction of S-1657. When Senator Schmitt introduced S-1657 to the Senate, he offered the following very critical comments:

> The influence of the Federal Government on the innovation process is extensive. For example, the Federal Government currently supports some $35 billon of research and development through grants and contracts, about half the total national investment in R & D...Unfortunately the policies of Federal agencies vary widely regarding assignment of rights to performers of federally funded R & D. The Government's policy generally has been to retain title and rights to these inventions. As a result, the Government presently holds title to some 28,000 inventions, of which only about 5 percent have been commercialized. (BNA's Patent, Trademark & Copyright Journal, No. 548, October 1, 1981, page D-1).

A companion bill to S-1657 was introduced into the House by Congressman Ertel (H. R. 4564) and the following language from the Report from the House Committee on Science and Technology that accompanied this bill is also of interest:

> The patent system is a factor in this situation. It must be recognized that the Federal Government cannot commercialize and market products or processes that have been developed under the auspices of Federal funding. When the Government keeps title to the inventions made, industry generally will not develop, commercialize, or market these technologies. Without goods or services in the marketplace, the economic benefit of the invention cannot be realized.
>
> A better way is needed to ensure that federally-funded patents are commercialized. (Page 18)

With specific reference to question three in Dr. Trivelpiece's letter, a change in government/DOE patent policy that would permit the Laboratory to retain title would provide both financial and professional incentives to the Lab and its scientists. If title was left in the Laboratory, we would be in a position to license our inventions and earn royalties from such licensing arrangements. Most universities that have established patent administration programs have developed policies that permit their inventors to share in such royalty income, with the residue being put back into support of the research effort. We could consider such a program here. A more subtle incentive would be the knowledge by the Laboratory management and its researchers that there was a greater chance for technology developed here at the Lab to be transferred to the private sector and eventually become available to the general public through commercialization. Utilization of technology developed at the Lab would certainly have a positive impact on the morale in our research laboratories.

The final section of Dr. Trivelpiece's third question addresses the concern that a change in policy might raise the specter of a conflict of interest. We do not think such a conflict would arise at Brookhaven. This point was addressed by Dr. G. A. Keyworth when he wrote to the Senate presenting the position of the Reagan administration on S-1657. We agree with the comments offered by Dr. Keyworth on the conflict issue as well as on the underlying issue of retention of title by GOCO facilities, and have attached a copy of his letter for your information (letter of July 21, 1982, from Dr. G. A. Keyworth to Senator James A. McClure, U. S. Senate, Committee on Energy and Natural Resources).

Question four in Dr. Trivelpiece's letter raises several procedural questions relative to the program at Brookhaven. We have our own patent department, so that we prepare and prosecute, on behalf of DOE, all patent applications covering Brookhaven inventions. Because of this, we rarely experience any significant time delay in the preparation and filing of our applications. Our patent department conducts the prior art search, discusses the search results with the inventor, prepares the patent application after consultation with the inventor, and files the final patent application after careful review with the inventor. We think this review procedure has worked successfully for us.

With respect to any restrictions we might place on consulting, it is probably best to refer to the pertinent sections of the Laboratory's Scientific Staff Manual which I have enclosed. In brief, the Laboratory's position after all legal and ethical standards are met is that consulting by its scientific and professional staff, to the extent that it does not interfere with their regular duties or responsibilities, is encouraged. A description of the nature of the consulting work, the source of funds, the time to be spent and the contract, especially patent agreements, are all required and must be approved by the Department Chairman, the Laboratory contractor legal counsel, and the Assistant Director for Scientific Personnel.

As I said at the outset, we welcome the opportunity to offer our comments on these issues, and hope you find our remarks helpful. I would recommend that you contact Dr. Jerome Hudis, our Assistant Director for Scientific Policy and Planning at 516-282-3336, concerning the follow-up meeting on this issue.

Sincerely yours,

Nicholas P. Samios

Dr. Nicholas P. Samios
Director

NPS:MCB:clm

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Office of the Director

April 9, 1982

Mr. Arthur A. Churm, Director
Office of Patent Counsel
U. S. Department of Energy
Chicago Operations Office
9800 South Cass Avenue
Argonne, Illinois 60439

Dear Art:

On Friday, April 2, 1982, representatives of DOE and AUI held a prime contract negotiating session to discuss the patent provisions of the new contract. At this meeting, attended by Paul Gottlieb of your office, AUI presented a formal request that the provisions of Public Law 96-517 pertinent to the patent rights obtained by non-profit research organizations under Federal funding agreements be extended to AUI and be incorporated as the patent provisions of the new prime contract.

It is our understanding that the question of applying Dole-Bayh to the DOE national laboratories will be considered at the DOE patent conference next week. We are, therefore, outlining our request in this wire so that it can be considered, if appropriate, during your discussions.

Section 200 of P.L. 96-517 indicates in part that it is Congress' objective in enacting the legislation "...to use the patent system to promote the utilization of inventions arising from federally supported research or development..." This policy statement arose out of Congressional findings that the Government patent program followed previously, which basically called for the federal funding agency to take title, had failed to promote the development and commercialization of technology covered by Government-owned patents, a result that was clearly not in the public interest.

It is AUI's position that the application of Dole-Bayh to Brookhaven National Laboratory would result in a more effective transfer of technology developed at Brookhaven to the marketplace. As a basic, multi-purpose, non-weapons oriented research laboratory, Brookhaven would be the ideal choice for DOE to use as a test case to see if the application of Dole-Bayh to BNL, which would result in AUI retaining title to research results, would permit a more successful transfer of technology to the marketplace. Accomplishing this transfer of technology is at the core of all of the recent patent reform legislation.

We are hopeful that DOE will consider our request and structure our prime contract to establish an experimental Dole-Bayh program at Brookhaven, with provision for the evaluation of this program during the course of contract performance.

Sincerely,

Margaret C. Bogosian
Patent Counsel

MCB/clm

cc: Paul Gottlieb

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PATENT OFFICE

THE WHITE HOUSE
WASHINGTON

July 21, 1982

Dear Senator McClure:

This letter presents the Administration's position on the provisions of S.1657, the "Uniform Science and Technology Research and Development Utilization Act," concerning rights to inventions resulting from research performed by Government-Owned Contractor-Operated (GOCO) entities.

The Administration strongly supports the approach to this issue embodied in S.1657. That Bill, as reported by the Senate Committee on Commerce, Science, and Transportation, provides GOCOs the first option to ownership of inventions made with federal support, unless "exceptional circumstances" dictate otherwise. This approach is consistent with the central thrust of this important legislation -- private sector ownership of rights to patents resulting from federally-funded research, unless such ownership is contrary to the national interest.

Although this approach reverses the long-standing patent ownership practice of DOE and its predecessor agencies, as well as that of some other agencies, we have concluded, after careful study, that there is need for the change reflected in S.1657.

Successful technology development and commercialization by the private sector are critical to efforts to revitalize our economy and enhance our international stature. To this end, the Reagan Administration is committed to removing barriers to, and providing incentives for, increased private sector technological innovation and productivity. The major thrust of S.1657 is to stimulate innovation and productivity in the United States by encouraging transfer of federal R&D results to the private sector for commercialization. We, therefore, support S.1657 as a means of enhancing this country's efforts to commercialize technologies, increase productivity, and contribute substantially to job creation. Because GOCOs represent a tremendous source of technological innovations with significant commercial potential, they should have every incentive to identify and transfer these innovations to the private sector. Patent ownership has proven to be a powerful incentive to innovation and commercialization of technology.

Those promoting retention of the present policy suggest it is necessary to maintain GOCO commitment to agency goals and prevent the possibility that GOCO ownership of inventions might diminish or distract from the performance of assigned tasks and lead to a conflict of interest. In our review, no such conflicts were identified in the performance of any long-term government R&D contracts where contractors retained ownership of government-funded inventions. Absent compelling arguments to the contrary, we believe it inappropriate to establish any sweeping exceptions to the general policy proposed by S.1657.

In those specific situations where government ownership of inventions by GOCOs is justified, S.1657 authorizes agencies to limit the rights of a contractor simply by determining "that there are exceptional circumstances requiring such action to better promote the policy and objectives" of the act (Section 301(a)(2). This is consistent with the policy established in Section 101(5), to "guarantee the protection of the public interest."

We hope that this discussion clarifies the Administration's strong support for Senate passage of S.1657, including its handling of the GOCO issue. We will be pleased to discuss this issue with you and your Committee further as required.

We are advised by the Office of Management and Budget that there is no objection to the submission of this report for your consideration and that the adoption of the recommendations made herein would be consistent with the program of the President.

Sincerely,

Jay Keyworth

G. A. Keyworth
Science Advisor to the President

The Honorable James A. McClure
United States Senate
Committee on Energy and Natural Resources
3121 Dirksen Office Building
Washington, D.C. 20510

Scientific Staff Manual

Brookhaven National Laboratory

Office of Scientific Personnel
October, 1983

Eligibility. Regular, full-time members of the scientific staff are eligible to apply for Gradual Retirement. Each case will be evaluated as to the possible mutual benefit to the Laboratory and to the individual. Gradual Retirement status may commence no earlier than five years prior to the employee's normal retirement date (June 30 or December 31 following the 65th birthday). Work schedules for staff members on Gradual Retirement will be not less than half-time.

Approval. Requests for Gradual Retirement, or for modifications of the fraction of time a person is employed on Gradual Retirement, or for reversion to full-time employment, require the approval of the Department Chairman, the Assistant Director for Scientific Personnel, and the Laboratory Director.

Fringe Benefits Under Gradual Retirement. AUI retirement contributions will continue to be based on the employee's full-time salary. AUI group life insurance and long-term disability insurance based on full-time salary will be continued, provided that the employee continues to pay the employee group insurance premium based on full-time salary. Employees may, however, choose reduced coverage and corresponding reduced premiums based on the reduced salary under Gradual Retirement.

All employees who continue to work beyond their normal retirement date will have their retirement and insurance programs modified in accordance with AUI policy.

Pay or accrual of paid leave time, such as vacation, sick leave and holidays, will be prorated in accordance with the part-time salary or work schedule.

Children of employees granted Gradual Retirement shall continue to be eligible for the AUI Trustee Scholarships.

• OUTSIDE PROFESSIONAL EMPLOYMENT

The general propriety of members of Brookhaven staffs accepting outside professional responsibilities is recognized, but in each instance before any responsibilities of this sort are accepted, the following considerations must be weighed.

The primary obligation of all staff members is to carry out that part of the Laboratory's program for which they are directly responsible. Obligation is not merely to work during particular hours on particular days, but is professional in character and can be fulfilled only by positive accomplishment consonant with professional stature. As a corollary, every staff member is expected to take vacations to the extent necessary to enable performance of Laboratory duties with maximum effectiveness. Similarly, outside employment is expected to contribute to the staff members' effectiveness in their work at Brookhaven which is their primary obligation.

In considering an opportunity for outside employment, a staff member is expected to take account of accepted ethical standards and to act with due regard for canons of professional ethics. Consulting should not be accepted from an organization (or, if the organization be very large, from any particular division of it) which engages in direct and substantial business dealings with the Laboratory, either as a vendor or otherwise, especially where these dealings are in a field closely related to the proposed employment; nor should any consulting arrangement be entered into with a firm or organization which is actively seeking business from the Laboratory. Under no circumstances should staff members participate in procurement negotiations with an organization with which they have any consulting connection, nor should they participate in the evaluation or appraisal for Brookhaven or DOE of some technical aspect of the work of such an organization. Similarly, the names of Brookhaven National Laboratory, Associated Universities, Inc., and the U.S. Department of Energy must not be used in connection with any outside employment.

Brookhaven National Laboratory derives its financial support from the Government of the United States through the contract between Associated Universities, Inc. and the Department of Energy. Although staff members are not employees of the government, but of Associated Universities, Inc., the government is the ultimate source of their compensation. Therefore, Brookhaven is, in a sense, a public institution, and all opportunities for outside employment should be viewed in the light of the following principles.

Staff members should not accept compensation for work which can fairly be regarded as a part of regular duties or responsibilities. Similarly, they should not accept compensation for doing individually work which the Laboratory, as a public institution, would expect to do for the employing organization or which is essentially a part of the Brookhaven program. Staff members shall not accept gifts or special favors from individuals or organizations with whom Brookhaven is doing business, or proposes to do business. It should be noted that acceptance of a gratuity may be a violation of United States Code, Title 41, Sections 51-54.

The spirit of the statutes forbidding dual compensation for government employees should be observed. Broadly speaking, these are directed at situations where the employee must try to serve two masters. More particularly, they forbid the acceptance of outside compensation for doing work for which the individual is already being paid directly by the Federal Government. In keeping with these principles, services to be rendered to the Department of Energy or to a DOE prime contractor normally should be performed as a part of the staff member's regular Laboratory duties and regulated by contractual arrangements made by the Laboratory management or possibly by interagency agreements. Therefore, except as expressly authorized in unusual cases, no staff member should accept compensation for services of this type. In seeking authorization, a complete disclosure of pertinent facts is essential. It may also be deemed appropriate to treat in similar fashion consulting services to be rendered to some government agency other than DOE or to a cost-type contractor with such an agency. The particular circumstances in each such case must be given careful consideration.

No outside organization should be permitted to obtain a preferred position in learning the results of work at Brookhaven or other U.S. Department of Energy installations by employing members of the Brookhaven staff. For example, in performing services for an outside organization, staff members must not take advantage of information coming to them in the course of their employment at Brookhaven, unless this information is generally and readily available. Similarly, no arrangement for consulting services should be entered into with a firm whose business is in a field in which Brookhaven does or has done research, the results of which are not yet fully reported and in the public domain. In many cases, it will be difficult to distinguish between the imparting of information which is not generally available and the legitimate exercise of professional skill in the solution of a problem. Much must be left to the individual's sense of propriety.

Staff members shall not use for personal gain or make other improper use of privileged information acquired in connection with their employment. The term "privileged information" includes, but is not limited to, unpublished (i.e., not reported or in process of being reported through established procedures) information relating to technological and scientific developments; medical, personnel, or security records of employees; anticipated materials requirements or pricing actions; possible new sites for government or AUI-connected operations; and knowledge of selection of contractors or subcontractors in advance of official announcement.

The relationship of the Brookhaven staff member to any outside organization from which compensation is received should be that of an independent contractor. The acceptance of management responsibility or of any position creating a fiduciary relationship is undesirable. Again, disclosure of details is essential.

When the outside professional employment is to be done on the Laboratory site, as in the case of acting as editor or providing editorial assistance to a scientific journal or periodical, suitable arrangements must be made with the outside organization to compensate the Laboratory for the use of secretarial, and such other office services as may be required. Please note Section concerning *Adjunct Appointments and Editorships.*

Procedure. A staff member wishing to enter into an outside consulting arrangement or comparable employment service shall submit a request for approval on the form entitled, "Request for Consent to Engage in Outside Activity", copies of which are available either in Departmental offices, or the Office or Scientific Personnel. This form calls for a) complete information with respect to the terms of the proposed arrangement, b) a description of the organization seeking the services of the staff member, c) complete information with respect to all other outside business activities which might be expected to affect Laboratory work or involve some conflict of interest, and d) in the case of editorships or similar activities to be performed on site, information about arrangements to reimburse the Laboratory for secretarial assistance, telephone and other office services and the like. Copies of letters of intent or contracts for such services must be included with the request.

The completed forms should be submitted to the Department Chairman in time to permit adequate review, upon whose recommendation the form is transmitted to the Director's Office for approval. Notice of final action is given to the staff member and the Department Chairman.

Criteria for Approval. In determining whether to approve outside employment of a staff member, the policy consideration set forth above shall be considered, and the following administrative criteria shall also be applied.

In no event must outside employment, by consumption of time, or otherwise, be permitted to impair a staff member's usefulness to Brookhaven.

Outside employment during regular working hours must be covered by annual leave or leave without pay.

Laboratory facilites, equipment, and materials must not be used for non-Laboratory work. Such use would be a violation of Federal Law.

The method of compensation must be disclosed and will be considered in determining whether any actual or potential conflict with the staff member's regular employment exists. Thus, the staff member must not be obligated by a retainer or any other arrangement to be available upon request by an outside organization. Such an obligation would inevitably raise the possibility of substantial conflict with the prior and primary obligation to Brookhaven. Similarly, if the staff member has, or is to have a substantial proprietary or other immediate financial interest in the outside organization seeking consulting services, all the facts should be disclosed so that they can be weighed in determining the existence of a possible conflict with the staff member's primary obligation and with the public interest.

The source of support for the work in which the staff member will participate is an important consideration. As indicated above, in the statement of policy, if the work in question is to be paid for by a government agency, it should, as a general rule, be the subject of a contractual arrangement of some sort between the Laboratory and the outside firm, rather than a source of personal financial gain to the staff member, funds for whose compensation are already being provided by the government. This requirement is particularly applicable where the outside organization is a DOE cost contractor.

Care must be taken to prevent any impairment of DOE patent policy as set forth in the contract between AUI and DOE for the operation of Brookhaven National Laboratory and any patent agreement required to be signed by the staff member as part of a proposed consulting arrangement. The following paragraph is considered to provide adequate protection, and its inclusion in all outside consulting agreements, in substantially the form given, is required:

> "It is recognized that the Consultant, as an employee of Brookhaven National Laboratory, has executed an agreement requiring disclosure and assignment to the Department of Energy of inventions and discoveries made in the course of employment. If at any time a question arises whether an invention or discovery is subject to this agreement or to the Consultant's agreement with Brookhaven, the matter shall be submitted to the Department of Energy for determination, and the Department's decision shall be final and conclusive. For purposes of this agreement, the term "Department of Energy" shall mean the Department's Manager at Brookhaven or such other representative as it may designate."

The foregoing criteria are not intended to be all inclusive. Both the Department Chairman or Division Head and the Director are expected to exercise their best judgment in the light of all circumstances known to them in determining whether to give or withhold approval of a proposed consulting agreement.

A record of all outside consulting arrangements entered into by staff members is maintained by the Office of Scientific Personnel. This record will be brought up-to-date annually, and staff members will be expected to provide information on interim changes.

Honoraria. The handling of honoraria is a vexing matter cloaked in custom and privilege. In any case, honoraria are taxable as income, unless clear evidence can be produced that such payments are in lieu of and equivalent to expenses incurred in the activity. In accepting an honorarium from a private source, e.g., a university for giving a seminar, the recipient must ascertain whether it is in lieu of expenses or not and whether the source is the Federal government or not. If it is the government, the prohibition against dual compensation applies as described above.

It has become a widespread practice to offer honoraria for serving on review panels or boards and similar activities, for which no contractual relationship exists. The rule which only the individual can apply suggests accepting honoraria only if the duty is beyond that normally expected of the individual, whether in kind or duration. Sitting on a panel during a normal workday may be different than serving on a Saturday or Sunday. If the source of the funds is the government, or a direct contractor to the government, an honorarium cannot be accepted in the former case, but may be accepted for weekend service. The burden rests on the individual, since recourse to a fixed arbitrary institutional policy is not satisfactory in view of the variety of circumstances under which honoraria are proffered. Prudence suggests using leave, either vacation or without pay, or refusing the honorarium if any doubt exists.

BROOKHAVEN NATIONAL LABORATORY
ASSOCIATED UNIVERSITIES, INC.

Upton, Long Island, New York 11973

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Office of the Director

April 4, 1983

Dr. James F. Decker
Office of Energy Research
Mail Stop 3F-032
U. S. Department of Energy
Washington, D. C. 20585

Dear Dr. Decker:

I am writing in response to your memorandum dated March 22, 1983, concerning the Technology Transfer Meeting that was held at DOE Headquarters in February. Dr. Jerome Hudis, Assistant Director for Scientific Policy and Planning at Brookhaven, and I attended the February meeting. We have both reviewed your draft report on this meeting and while we are in basic agreement with your summary of the session, we think there are several significant points that were raised at the meeting which should be reflected in your report.

The second question in Dr. Alvin W. Trivelpiece's letter of January 12, 1983, concerned possible royalties and fees for the Laboratories, and consideration of this question prompted a discussion at our meeting that recurred throughout the session. There were comments offered by representatives from both the industrial and university contractors to the effect that technology licensing and technology transfer programs require an investment of time and money on the part of the research facility with the risk that such investment will not result in any substantial economic gain. Throughout the discussions on this issue, the Laboratory representatives consistently came back to the same basic premise--the ultimate goal of a technology transfer program for the National Laboratories is to permit the commercialization of laboratory origin research by industry so that the American public can best benefit from the investment of tax dollars into Government sponsored research. This is the goal that we must focus on and we cannot and should not be diverted by placing too much emphasis on the income raising potential of technology transfer. If licensing does result in some royalty income, this, of course, is an added benefit, but the main thrust of the program is to maximize the utilization of Government funded research.

Another point that was raised in the responses by a number of the

Laboratories and which was discussed at length at the meeting, was the question of giving the National Laboratories the option to retain title to inventions of their employees. The responses to Dr. Trivelpiece's January 12, 1983, letter submitted by Argonne, Berkeley, Brookhaven, Stamford, Princeton, and Los Alamos all specifically suggested that one regulatory or DOE policy change that would enhance the Laboratories' ability to transfer technology to industry for possible commercialization would be to permit the Laboratories rather than DOE to retain title to inventions and patent rights. The Stamford recommendation, found at page 3 of Dr. Wolfgang Panofsky's letter of January 24, 1983, calls for the "...elimination of the retention by DOE of title to patents, and granting of title to the university in consonance with the intent of P.L. 96-517..." The response from Dr. Donald Kerr of Los Alamos National Laboratory in his letter of January 27, 1983, contains a similar proposal:

> Several specific changes, clarification or expositions of policy would contribute to a strengthening of the Technology Transfer process in the licensing area or in more general collaboration with industry:
>
> . Make Laboratory inventions programmatically available for licensing.
>   - The Bayh-Dole Bill (PL 96-517) could be exercised to waive patent rights to university and nonprofit operators of GOCO facilities.

Discussion of these recommendations at the meeting led to what appeared to be unanimous consent by the Laboratories that: 1) Laboratory retention of title to inventions would probably enhance the ability to transfer such inventions to industry; and 2) the necessary changes should be made in DOE policy, regarding application of the Dole-Bayh Bill to university and non-profit GOCO contractors, and regulations, regarding industrial GOCO contractors, to permit these contractors to have the option to retain title to in-house inventions. This was perhaps the most significant concensus reached by the Laboratory representatives and should be reflected in the report on the meeting.

As we have indicated to you in the past, we welcome the opportunity to participate with the Department in the construction of a meaningful and effective technology transfer program, and we hope the comments offered above will be helpful.

Sincerely,

Margaret C. Bogosian
Patent Counsel

MCB/clm

TECHNOLOGY TRANSFER, DOE LABORATORIES*

Lab	What is the Laboratory doing to effect Technology Transfer?	If allowed to retain fees and royalties, how much collected in last 10 years?	Structure of T^2 program?- a) incentives for Lab and inventor; b) mechanism for patent licensing; c) encouragement of inventor/entrepreneurs; d) safeguards for Lab mission.	Institutional impediments?- a) time to file for a patent; b) review process for patent applications; c) impediments to licensing or selling patents and copyrights (particularly for software) d) restrictions on consulting.	DOE, Government and contractor regulations and policies that should be changed to promote T^2?
Sandia	1 3/4 % of budget for T^2 activities.	Legal expenses + up to $3 - 4M/yr.	T^2 part of lab mission; patent rights to lab; self generated; COI.	DOE owns patents; ltd. consulting (state and local government).	Encourage exclusive licensing.
Ames	ORTA; technical opp. assessment; liaison with state agencies; publications; user facilities; graduate research con'ts.	$M's/yr.	T^2 is mgmt. responsibility; publication, consulting, industry and government interaction; patents. --	Time, disclosure to filing: 13 - 18 months; publications review by DOE; preference for small business & non-profits; reduces commercialization potential; consulting on off hours only.	Permit use of DOE facilities for others; liberalize patent & licensing policy; provide incentives to labs & inventors.
LBL	ORTA; publication; workshops; training.	$20 - 40M	Verify commercialization of lab technology; patent incentives to staff; patent rights to lab for transfer to industry; safeguards to assure objectivity.	Time, disclosure to filing: 1/2 - 1 yr.; publications review by LBL; DOE owns patents, consulting permitted.	Allow contractor ownership of patents; reduce time delays in filing and licensing; liberalize work for others policy; liberalize consulting regulations.
ORNL	ORTA; technology opp. assessment.	$10M	Assess, publicize, provide technical support; staff incentives.	Time to file: 3 - 6 months; publications review by U.C.; DOE owns patents; consulting permitted.	Allow labs and employees to retain royalties; provide monetary awards for patents; liberalize consulting rules; encourage exclusive patent rights; allow joint bidding with industry; support "adaptive engineering."
SLAC	Info. exchange; publication; office of Technology Licensing.	Basic research; not applicable.	Cf. pamphlets describing Stanford T^2 program.	Time for filing: high; publications review by SLAC; DOE owns patents; consulting permitted.	Eliminate DOE ownership of patents; promote information interchange with foreign nationals.
ANL	T^2 conferences - industry, university, local gov't.; work for others.	Many inventions; modest income.	Apply income to disc. research & inventor rewards; mktg. efforts by labs; patent rights to inventors.	Time to file: like industry; DOE owns patents; protection for software now possible; consulting permitted.	Increase flexibility in granting waivers and in subcontracting.
PNL	Stevenson-Wydler activities (ORTA); public meetings; publication; Use Permit.	Not applicable.	Income sharing with inventors (96-517); licensing program; encourage inventors; safeguard against COI.	DOE owns patents; publications review by BNW.	Define objectives of specific T^2; source of funds; who manages.
Fermilab	Ind. affiliates program; publication; technol. assessment.	Not applicable.	Cf. Q-1; staff interaction with industry.	Patenting process - 3 years; review - DOE; ltd. consulting.	Loosen requirements on competitive bidding and publication of technical reports.
LLNL	ORTA; opp. assessment; liaison with industry & local gov't.; work for others.	Not applicable.	Separate T^2 org.; use license income for adaptive eng.; offer alternative employment choices; lab. Director responsible for non-interference with lab mission.	Time for filing: 1 year; review - acceptable; difficulties in DOE waivers and excl. licensing.	Allow all rights to sponsors in "use for others" project.
PPPL	Inventor recognition; publication; conferences; Utilities Advisory Council; Ind. Training Program.	> $1M	Invention awards; patent rights to lab; income to lab & shared with inventors; resp. for lab mission assigned to PPPL Program Comm.	Review and filing by DOE; DOE owns patents; difficulties in granting waivers; consulting permitted.	Provide a financial stake for lab and staff in DOE inventions.
LANL	Staff exchanges with industry; work for others; patent waivers; conferences.	$3 - 5M	Staff-industry interaction; idea inventory & evaluation; patent filing; mktg. (by outside org.); financial incentives to lab and inventors.	Time for filing: 6 months; DOE ownership; consulting permitted.	Provide greater rights to GOCO contractors; reduce time for excl. licenses and waivers; establish more flexible DOE policy on licensing and on industry collaboration; liberalize policy on work for industry.
Gould	Recommends outreach program to identify prospects and communicate process to T^2.	No response.	Staff-industry interaction; inventor awards; open house activities.	No response.	No response.
BNL	ORTA; opp. assessment; liaison with local gov't., inventors' workshops.	Not applicable.	Patent rights to lab; reduce time for waiver/licenses from DOE; royalty sharing with inventors.	Time for filing: (by BNL; no delays); DOE ownership of technology; consulting permitted.	Allow lab to retain title to inventions, and inventors to share income from licensing.

*Laboratories' responses to Letter of Alvin W. Trivelpiece, Director, Office of Energy Research, January 12, 1983.

Jerome Hudis
Biographical Information

Dr. Jerome Hudis is an Assistant Director of Brookhaven National Laboratory, Upton, L.I., New York, where he oversees long-range planning and technology transfer activities.

Dr. Hudis received a B.S. in Chemical Engineering and a Ph.D. in Chemistry from Washington University in St. Louis, Missouri and joined Brookhaven's Chemistry Department as a research chemist in 1952.

From 1967-68, Dr. Hudis was a Visiting Fellow at CERN, a nuclear research facility in Switzerland, and he spent a year in Washington, D.C., from 1975-76, as a program manager in the U.S. Energy Research and Development Administration's Division of Physical Research. He was appointed assistant chairman of the BNL Chemistry Department in 1968, deputy chairman in 1972, chairman in 1977, and Assistant Director of the Laboratory in 1981.

He is a member of the American Association for the Advancement of Science and the American Chemical Society, and is a past-chairman of the ACS Division of Nuclear Chemistry and Technology.

Dr. Hudis resides in Brookhaven, New York.

Mr. WALGREN. Could you elaborate a little bit on why the DOE has not transferred or created one exclusive license? You mentioned the time factor. I would like to focus you on that unique statement that you have developed a 3-year or so——

Dr. HUDIS. I cannot speak for the Department of Energy and their legal staff. We have tried very hard over the last 4 years to make some changes. The Dole-Bayh bill would have allowed the Department of Energy to go along with it, to treat the GOCO's, especially the university-type operated GOCO's, under that bill, and the Department of Energy voted not to go along with that provision.

We have a letter in our backup material which at the time our contract was being renewed, our patent attorney, Ms. Bogosian wrote asking the Department of Energy to use us as a guinea pig by allowing Dole-Bayh to apply to us since we have no classified work which goes on at the Laboratory. We could think of no reason why we could not be treated much like a university. We were refused. So, I cannot speak for the Department of Energy.

The Department of Energy has provided us with waivers, specific waivers, which have allowed us to do a great deal in the last 2 or 3 years. I am not really downgrading them. However, again, as Mr. Alexander said, I would prefer to see it as law than as specific waivers given by specific people who change with the times and the agency administrators who change with the times. We think it is a reasonable thing to do. We would like to see it in law.

Mr. WALGREN. Do you think there is a difference between your situation where you are, I gather, nonprofit?

Dr. HUDIS. That is correct. Associated Universities Inc. is a nonprofit organization.

Mr. WALGREN. Is your situation different than a laboratory run by a single, private, for profit contractor, in your view, as to the implications of the contractor retaining all proprietary rights to dispose of as they see fit, contrasting your laboratory with Oak Ridge, for example?

Dr. HUDIS. I am guessing; I can't speak for Oak Ridge or Martin-Marietta. Certainly, as I mentioned, one of the provisions in the bill states that all net profits after the expenses have been paid on any patentable material from the Laboratory would go back to R&D efforts at the facility. In that respect, I would presume that this bill treats Associated Universities Incorporated and Martin-Marietta in exactly the same—no, I take that back. It says GOCO's. But they are a GOCO, so, yes. It treats them exactly the same way.

Mr. WALGREN. I suppose to the degree the money came in to the Laboratory, it would save the taxpayer money because it would displace a necessary appropriation that would otherwise have to flow.

Dr. HUDIS. If that happens, and I am still an administrator, I would like to use such money to start to do new exploratory research, to take another jump in our research efforts.

Mr. WALGREN. Would that distract you from the mission of the Laboratory? Who sets the mission of the Laboratory? If there were lots of money coming in and the Director of the Laboratory were able to allocate that in his own judgment or within his own discretion, would they go off on a different track?

Dr. HUDIS. I think that is a very important point. The mission of the Laboratory, of course, is determined by the interaction between the Department of Energy and the contractor and the Laboratory administration. We would always have to be careful. Our major purpose in life is to work with and for the Department of Energy and the Nuclear Regulatory Commission. So, we would have to be very careful that any kind of incursion made by profits from such ventures, say, something which hit it very big. We would certainly have to be careful about how it was treated. I think that is a long shot.

Most of what we have done so far, these 83 patents, for example, in the last 4 years, with most of them, the interest has been from small companies who have been interested in developing them. I really don't see millions of dollars coming back to the Laboratory.

I think, therefore, that that is a good philosophical question. I am not sure that it is a bridge we have to cross.

Mr. WALGREN. Let me ask you your version of the reasonable time that you would report a patent to the Government to secure those proprietary rights.

Dr. HUDIS. We are a basic research laboratory, so our people tend, want, and need to publish their results as quickly as possible. Therefore, our patent process is tied in with the publication process. We, too, as one of the other witnesses states, want to make sure that we are not going to be wasting time or effort or money. I think the timing comes at the same time as publication. My feeling is within 1 year, certainly, of when the work is completed in some reasonable form.

Mr. WALGREN. Some of the laboratories do have substantial retained fees and royalties, don't they? Or couldn't they? Some of these other national laboratories are reporting fees and royalties over 10 years of $20 million approximately. So, there could be a substantial amount of money involved.

Dr. HUDIS. That could be. I would like to see that situation occur. But you are right; you would have to be very careful as to how you operated that. You have to remember that our prime mission is doing basic research, long-term basic research for the Department of Energy. Unless we want to change that whole picture completely, we would have to continue having that as our prime mission.

Mr. WALGREN. When a private company does research at Brookhaven and takes title to the inventions, do you know that you know of all the discoveries that they are making so that you can protect the Government interest in licensing that technology?

Dr. HUDIS. So far, I think that we are in very good shape in that respect. I think we have something like 12 or 13 specific contracts in the last few years. You see, they are quite specific usually. They come in because we have the facilities, we have the expertise, we have the staff and equipment to do a specific job and that is why they come to us in the first place. It is quite a specific proposal which they write to us as to what they want to do and how they wish to do it. Therefore, we have a very good idea of exactly what is coming out of that. I think we have a pretty good handle on that right now.

Mr. WALGREN. You feel confident about that?

Dr. **Hudis**. Well, I think we would have to, if this law or a similar one came into being. We would certainly have to truly make a real change in our administration of the patent office and our technology transfer approach. We would really have to get very serious and formal about it.

Right now, since all the patent rights go to the Government, we basically protect the Government's rights in everything that we do and then, basically, most of the actions stop. There is no doubt that there will be many more difficulties; there will be many more worries. However, we think that in the long run it will be worthwhile, and we think we could do a better job than is being done now. We would like to try it. That is basically our approach.

Mr. **Walgren**. Can you envision the way that you would choose candidates from the private sector to develop a product from a license?

Dr. **Hudis**. No. We have thought about that and we have talked about it. I would say, for the most part, that there would be little doubt about our prime candidate because most of these things would result from collaborative work with people at the Laboratory. As I say, we have many industrial people working at the Laboratory now. Much of what would come out, I think, would be outgrowths of some of that work which is perhaps open, and they would say, that looks really interesting. We would now like to take off from there. We would now like to have proprietary rights on that and exclusive rights on anything that is patented, so we want to change the way we are working. We would now like to pay full cost recovery for this or that.

They would have been in there working with us, and I think that they would certainly get first crack. They would have been partners from the very beginning. I think that is the important thing. The Laboratory would be used more as a partner by many commercial firms and by scientists in industrial firms much more than we are now. I think that would be all to the good.

Mr. **Walgren**. All right. Thank you very much, Dr. Hudis. We appreciate your interest.

The last witness is Dr. Robert Shaw. Dr. Shaw is with the American Institute of Aeronautics and Astronautics. We appreciate your being able to come before the committee, Dr. Shaw. As I said at the outset, your full statement will be entered in the record as a matter of course, and we would appreciate hearing your outline of the points that you feel we ought to be thinking about.

STATEMENT OF DR. ROBERT F. SHAW, CONSULTANT, AMERICAN INSTITUTE OF AERONAUTICS AND ASTRONAUTICS

Dr. **Shaw**. Thank you. I appreciate the opportunity to appear before the committee and participate in these hearings.

I am an independent consultant with many years of experience in research and development, and in the development of new businesses. For the past 3 years, my consulting services have been retained by the American Institute of Aeronautics and Astronautics to assist in a National Aeronautics and Space Administration sponsored technology utilization program designed to facilitate the transfer of NASA technology to U.S. non-aerospace industry. The purpose of this NASA program is to improve the productivity and competitiveness of U.S. industry in world markets.

I am in agreement that the revisions in Federal patent policy dealing with federally sponsored research and development are necessary to: One, establish a uniform patent policy; two, remove the primary obstacles that, in the past, have prevented more qualified companies from responding to requests for proposals for contracted R&D; and three, to provide the incentive for contractors to invest in the commercialization of inventions and technology conceived or developed under federally sponsored R&D.

My specific concern is the potentially adverse impact this bill, H.R. 5003, could have on the effectiveness of the technology utilization programs of NASA and all of the other Federal laboratories, and the resulting loss of technology availability to U.S. industry.

Nonprofit organizations and small businesses, especially small businesses, often use carefully selected Federal agency contracts as a primary source of funding for the development of a product line. Retention of patent rights to inventions is justified in these cases, since the single-minded purpose is development and commercialization of the specific technology or invention.

Large corporations with well equipped laboratories complemented by a talented staff and having specifically identified product needs should not be denied a similar opportunity if they can identify federally sponsored R&D that would further strategic and tactical market positions through improved or expanded product offerings, especially since these companies can generally provide superior R&D results and possess the capital and other resources to ensure the maximum probability for commercial success of the products which they develop.

The difficulties that I perceive would arise when the federally sponsored R&D has less immediate or even remote commercial potential. This could be for any number of reasons, such as being out of the scope of the current business interest of the contractor, being very basic in nature, or perhaps lacking commercial cost effectiveness. Technology and concepts within these categories should be communicated as effectively as possible to U.S. industry to prevent unnecessary duplication of effort and to allow others to adapt and apply these developments to their own particular situations or perhaps resolve the problems by different creative approaches.

H.R. 5003 would provide a great temptation for a contractor to routinely request a license for proprietary status to cover the unlikely event that the concept may be patentable or that the contractor may be able to use it sometime in the future. Lack of exposure of this information would preclude competitive bidding for future development of these technologies by contractors that may be better positioned to advance the technologies.

Differentiating between contractors that have a sincere and immediate interest in commercialization of an invention and those who are banking it or shelving it for the future will be difficult. Since patents require, on the average, 2 years to issue, this criteria is impractical. Magnitude and intensity of development effort by a contractor following reduction to practice are qualitative judgments and often are not directly correlatable to the importance of the invention. Neither is a specific time to commercialization a valid constraint. Some inventions can be brought to market in months while others require a decade.

The approach that has been successful in promoting more rapid commercialization has been the waiver of Government rights when the contract involves cosponsored, cost sharing, or joint venture research and development. A more uniform and less demanding Federal policy for these classes of contracts would, in my opinion, be more effective for identifying contractors who perceive commercial opportunities and who are committed to rapid commercialization of inventions. For exclusively federally sponsored R&D where there is an unanticipated invention or technical development, there should be a uniform Federal policy that would allow the contractor to have an option of first refusal for an exclusive license upon payment of a nominal license fee. Failure to pursue development and commercialization, as evaluated on a case-by-case basis, would result in loss of license and forfeiture of license fee.

The above is recommended based on my experience in business and direct involvement in NASA's technology utilization efforts. It has been my experience that few inventions having great commercial portent arise as a direct consequence of federally sponsored R&D. Most commercial products arise from response from consumer demand and have feature sets that satisfy consumer needs. The needs of the Government agencies rarely parallel those of the consumer. There is also a large difference in measure of cost effectiveness between products for the Government and products for the consumer.

Companies that have participated in the NASA technology utilization program for the express purpose of finding new consumer products have been disappointed. However, companies we have worked with that have taken the time to examine the NASA developed technologies with a view of how they can be modified or creatively applied to reduce their current manufacturing costs or improve an existing product have been very satisfied with the results they have gotten from the NASA technology. Approximately 9 out of the 10 technologies that have been transferred to date are not patented. This is not because they are not patentable technologies, but because NASA or the contractor were realistic in their appraisal of the commercial value to themselves. For their line of business, the technologies were not worth the time, expense, and risk required to develop the market for commercial applications. Many of these technologies, ideas, and concepts, would not have been available to U.S. industry if some of the contractors had the opportunity to obtain, by a simple request, that they have proprietary rights on the off chance that they may some day commercialize the technology in the form of a product or service.

I would like to spend the rest of my time answering questions about technology transfer and the impact and consequences of my statement.

Thank you.

[The prepared statement of Dr. Shaw follows:]

Statement Of Robert F. Shaw, Independent Consultant On Technology Utilization

Mr. Chairman and members of the committee, my name is Robert F. Shaw. I appreciate this opportunity to appear before this distinguished committee to testify at these hearings on H.R. 5003, the Uniform Science and Technology Research and Development Utilization Act.

I am an independent consultant with many years of experience in research and development, and in the development of new businesses. For the past three years, my consulting services have been retained by the American Institute of Aeronautics and Astronautics (AIAA) to assist in a National Aeronautics and Space Administration (NASA) sponsored Technology Utilization Program designed to facilitate the transfer of NASA developed technology to U.S. nonaerospace industry. The purpose of this program is to improve the productivity and competitiveness of U.S. industry in world markets.

I am in agreement that revisions in Federal patent policy dealing with Federally sponsored research and development are necessary to (1) establish a uniform patent policy, (2) remove the primary obstacles that, in the past, have prevented more qualified companies from responding to requests for proposals for contracted R&D, and (3) provide the incentive for contractors to invest in the commercialization of inventions and technology conceived or developed under Federally sponsored R&D.

My specific concern is the potentially adverse impact that H.R. 5003 could have on the effectiveness of the technology utilization programs of NASA and all of the other Federal Laboratories, and the resulting loss of technology availability to U.S. industry.

Nonprofit organizations and small businesses, especially the latter, often use carefully selected Federal agency contracts as a primary source of funding for the development of a product line. Retention of patent rights to inventions is justified in these cases since the single-minded purpose is development and commercialization of the specific technology or invention.

Large corporations with well equipped laboratories complemented by a talented staff and specifically identified product needs should not be denied a similar opportunity if they can identify Federally sponsored R&D that would further strategic and tactical market positions through improved or expanded product offerings. Especially since these companies can generally provide superior R&D results and possess the capital and other resources to insure the maximum probability for commercial success.

The difficulties that I perceive would arise when the Federally sponsored R&D has less immediate or remote commercial potential. This could be for any number of reasons such as being out of the scope of the current business interest of the contractor, being very basic in nature, or lacking commercial cost effectiveness. Technology and concepts within these categories should be communicated as effectively as possible to U.S. industry to prevent unnecessary duplication of effort and to allow others to adapt and apply these developments to their own particular situations or perhaps resolve the problems by different creative approaches.

H.R. 5003 would provide a great temptation for a contractor to routinely request a license or apply for proprietary status to cover the unlikely event that the concept may be patentable or that the contractor may be able to use it sometime in the future. Lack of exposure of this information would preclude competitive bidding for future development of these technologies by contractors that may be better positioned to advance the technologies.

Differentiating between contractors that have a sincere and immediate interest in commercializing an invention and those who are "banking" it for the future will be difficult. Since patents require, on the average, two years to issue, this criteria is impractical. Magnitude and intensity of development effort by a contractor following reduction to practice are qualitative judgments and often are not directly correlatable to the importance of the invention. Neither is a specific time to commercialization a valid constraint. Some inventions can be brought to market in months, while others can require more than a decade.

The approach that has been successful in promoting more rapid commercialization has been the waiver of Government rights when the contract involves cosponsored, cost sharing, or joint venture research and development. A more uniform and less demanding Federal policy for these classes of contracts would, in my opinion, be more effective for identifying contractors who perceive commercial opportunities and are committed to rapid commercialization of inventions. For exclusively Federally sponsored R&D where there is an unanticipated invention or technical development, there should be a uniform Federal policy that would allow the contractor to have an option of first refusal for an exclusive license upon payment of a nominal license fee. Failure to pursue development and commercialization, as evaluated on a case-by-case basis, would result in loss of license and forfeiture of license fee.

The above is recommended based upon my experience in business and direct involvement in NASA's technology utilization efforts. It has been my experience that few inventions having great commercial portent arise as a direct consequence of Federally sponsored R&D. Most commercial products arise from response to consumer demand and have feature sets that satisfy consumer needs. The needs of the government agencies rarely parallel those of the consumer. There is also a large difference in measure of cost effectiveness between the government and the consumer.

Companies that have participated in the NASA technology utilization program for the express purpose of finding new consumer products have been disappointed. However, companies that we have worked with that have taken the time to examine the NASA developed technologies with a view of how they could be modified or creatively applied to reduce their current manufacturing costs or improve an existing product have been very satisfied. Approximately nine out of ten technologies transferred were not patented. This was not because they were not patentable, but because NASA or the contractor were realistic in their appraisal of the commercial value to themselves. For their line of business the technologies were not worth the time, expense, and risk required to develop and market for commercial applications. Many of these technologies, ideas, and concepts would not have been available to U.S. industry if some of the contractors had the opportunity to obtain, by a simple request, that they have proprietary rights on the off chance that they may someday commercialize the technology in the form of a product or service.

ROBERT F. SHAW
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Business: (201)635-0857

SUMMARY

Profit and results oriented individual with extensive executive experience in new business development, technology evaluation, and research and development. President of a management consulting firm specializing in high technology based businesses and a sister firm active in the transfer and application of high technology.

PROFESSIONAL HISTORY

1981 to present
Robert Shaw Associates, Inc.
Chatham, New Jersey

PRESIDENT

Established this consulting corporation specializing in management concerns of high technology businesses including capital financing, strategic and tactical planning, business plan preparation and analysis, technology analysis, market analysis and forecasts, product planning, and technology transfer.

1970 to 1981
EXXON Corporation
New York, New York

1978 to 1981
EXXON Enterprises
New York, New York

MANAGER/NEW BUSINESS DEVELOPMENT

Investigate and evaluate new business opportunities in emerging areas of technology and invest in or start-up new businesses outside the petrochemical and petroleum area to expand the base of EXXON Corporation.

- Sustained and maintained two previously failing divisions within budget while conducting study to evaluate future of divisions; critiqued planning, budgeting, hiring, technical development and manufacturing plans.
- Conducted marketing studies and technical evaluations to project potential for success and determine future strategies for operations divisions.
- Prepared and presented reports of findings to Board of Directors.
- Complete research and development responsibility for two divisions with combined operating budget in excess of $7 million.
- Appraise status of current technologies; project changes, future applications and profitability.
- Determine EXXON's mode of involvement in new technologies; assess and project strategic areas and tactical aspects of development.
- Prepare extrapolation forecasting including business and technical evaluations.
- Prepare future expansion plans; present investment suggestions regarding acquisitions to Board of Directors; write business plan, obtain funding, implement and execute plans including choice of site and personnel.
- Hired, trained and supervise 175 employees.

1977 to 1980
SILAG, Inc.
Division of EXXON Corporation
Fountain Inn, South Carolina

PRESIDENT

Recommended against dissolution of this failing division. Silicon carbide/aluminum metal matrix composite alloys; established research program and technical evaluation, demonstrated viability of technology, obtained funding and implemented all controls, annual sales now $1 million. Began as Executive Vice-President, received rapid promotion to above position.

1977 to 1978
EMDEX Division
EXXON Corporation

Milford, Connecticut

Began as Program/Project Manager, serving as high technology business analyst; assumed responsibility of Temporary Technical Director and subsequently Division Manager/EMDEX Division, a manufacturer of silicon photodetectors.

1970 to 1976
EXXON Research and Engineering Company
Linden, New Jersey

SENIOR RESEARCH PHYSICIST/GROUP HEAD

Responsible for directing research in organic and inorganic materials and their solar photovaltaic cell applications. Basic and applied research and manufacturing development on materials and solid state devices. Initiated solid state physics based research on semiconductor catalysis. Internal technical consultant for EXXON Corporation.

1969 to 1970
Energy Conversion Devices, Inc.
Troy,Michigan

Scientific Director — directed applied and basic research on the physics of amorphous materials and their applications to semiconductor devices. Inventor of thin film triode devices and optical mass memory using amorphous materials.

1962 to 1966
American Cyanamid Company
Stamford, Connecticut

Research Chemist — design and development of chemical and medical instrumentation; developed fiber optic refractometer, portable blood chromatograph, and thrombochronometer. Basic research on inorganic photochromism and electrochromism; inventor of electrochromic display technology.

PROFESSIONAL AFFILIATIONS

Program Director — American Institute of Aeronautics and Astronautics, New York, New York. Work with NASA to effect the transfer of NASA technology to private industry.

Scientific and business advisor, NASA's Materials Processing In Space Program, in development of related business opportunities in the Space Shuttle Program.

Adjunct Professor, Columbia University, New York, New York, 1970 to 1975. Taught graduate level courses in advanced energy conversion techniques.

Professional Society memberships.

AWARDS

Chairman's Management Bonus Awards, EXXON Corporation

American Cyanamid Graduate Fellowship Award

PROFESSIONAL PUBLICATIONS, PATENTS AND PRESENTATIONS

Twenty seven published papers

Fifteen U.S. and related foreign patents

Twenty-one invited seminars and colloquia

Eighteen presented papers

EDUCATION:

M.B.A. Program, Management/Finance, Rutgers University, Newark, New Jersey, 1975-1976.

Ph.D., Solid State Physics, Cambridge University, Cambridge, England, 1969.

University of Connecticut, Stamford, Connecticut, 1963 to 1966.
Graduate courses in Chemistry and Electrical Engineering.

B.S., Chemistry, North Carolina State University, Raleigh, North Carolina, 1962.

Mr. WALGREN. Thank you very much, Dr. Shaw. We appreciate that.

It is an interesting observation about the bulk of the benefit being in nonpatentable ways, I gather, from NASA research.

Dr. SHAW. Yes.

Mr. WALGREN. In particular, ways that improve an existing product or reduce cost rather than become a new product are the main benefits. I guess I am surprised at that. Why is that?

Dr. SHAW. I can give you my opinion, and it is based on watching people try to effect technology transfer both within the Federal labs consortium and within NASA.

The individuals in the Federal laboratories, including NASA, are very poorly equipped to evaluate the commercial potential of an invention. They are basically scientists and engineers and they are working on some sort of mission oriented development project. They don't have experience in what constitutes good commercial potential, that is, what is somebody going to buy, how much are they going to pay for it, what is our protective position, how long is it going to take us to develop it, what is the payback time, what are the barriers to entry of other people into the market, what are our particular advantages in these respects. They just don't have the capability of assessing whether an invention has good commercial potential or not.

The only people that have the capability of assessing whether an invention has a commercial potential are the people within the company that have a broad overview of the strategic plans for the company and tactical plans for achieving the strategic plans and objectives of the corporation. They know where there are deficiencies; they know where their strengths are, both in distribution and in marketing and selling. They know where their strengths are in R&D and they know where their strengths are in other areas of business. Being cognizant of their own particular situation, they can review a spectrum of technologies and pick and choose between the technologies and say, this one I think may have some potential for what we are trying to do. The others are interesting but they have no real potential for us. Somebody in a different business would have a completely different view.

Businesses, as they pick and choose among the technologies that NASA has to offer, are extremely unpredictable in what they are going to choose. For example, we were showing off one time the ceramic tiles on the space shuttle, displaying their superior thermal insulation characteristics and some of the characteristics that we perceived would make them viable candidates for super insulation material in new commercial products for extreme environments, et cetera. They were talking about the 31,000 individual tiles on the shuttle and one guy said to the other one, "Boy, I could really use that production control system that they have for producing 31,000 individual custom products." You never know what is going to turn the fellows on when they tour the centers and when they are exposed to the technology.

The best thing that you can do is expose them to the technology, understand what their requirements are, understand their approach, encourage them not to look for products because, in my experience, these products do not exist per se. There may be product opportunities, but these all require significant development. These products are not on the shelf. You cannot walk in and pick out the product and say, I want to sell that, sign a license agreement, and take it home with you, and put it on the market the next week. It is not that simple.

Mr. WALGREN. As a general matter, do you feel that there are instances where an agency like NASA should preserve the patent rights for the Government?

Dr. SHAW. Yes, I do. If we consider it in the light of what is the technology, what are the patents, and what are the implications to the future of the United States and its competitiveness in the world market, and its capability of creating a competitive position. For example, we have lost the automotive industry. We have lost the steel industry and we have lost the textile industry. These are world industries now. They are not controlled by any one country.

One of the last remaining industries that we have that we have fairly decent control over is the aerospace industry. If we can develop the commercialization of space, the aerospace industry will be the supporting industry for the commercialization of space and will be the portal industry to allow nonaerospace industries to use space as a commercial environment.

If, in the process of sponsoring research on the effects of microgravity, for example, NASA were to allow a few people to retain license and patents for basic effects that they saw in their Government-sponsored research, this would prevent this information from being disseminated and used creatively by other companies to establish new research directions or try new product ideas or new manufacturing ideas. They would never be exposed to that.

Therefore, I think in some circumstances, it is absolutely imperative for the interest of both industry, in general, and for society that some of these patents be retained by the agency and made available on a widespread basis.

Mr. WALGREN. How do you see, as under this bill we would be setting up the Secretary of Commerce as a coordinator or facilitator and we would be having NASA's patent policies overseen by a level in an agency which the Secretary of Commerce would lead. Are we getting into hindering the proper judgments if we require each agency to fit within a uniform Federal policy?

Dr. SHAW. I am really not very qualified to comment on the competency of the Department of Commerce to facilitate this. However, I think that if you review the NASA patent policy with respect to contractors, they have probably one of the most enlightened patent policies of any of the Government laboratories or Federal agencies. It has undergone many revisions in the past several years, designed exclusively and especially to facilitate the transfer of information from NASA and from the NASA contractors to other industries in the United States and to promote the commercialization of these technologies.

This involves such things as exclusive rights on patents, nonexclusive rights on patents. These are all obtainable based on how the particular company would like to commercialize the technology and approaches NASA, what sort of deal or negotiations they can work out with NASA.

I would add a suggestion that the NASA patent policy be thoroughly investigated as a model for some of the other Government agencies that don't have as flexible a patent policy.

Mr. Walgren. Then, the question is, is it wise to set up a uniform Federal structure over the agencies such as NASA, and particularly since NASA has done a good job and also since apparently 90 percent of the Government research is done within such a handful of agencies, the Department of Energy, the Department of Defense, and NASA. You would think that each one of those agencies might have a better feel for what the proper judgments and approaches might be. If we put a Secretary of Commerce over that and require another level of coordinating these policies, that might get in the way of the proper management.

Dr. Shaw. Yes, I see your point. My concern now is that every agency or virtually every lawyer in every agency has some discretionary limits within which he can decide what to do and how to interpret current policy. His limits and capabilities of judgment or areas of judgment are dictated by the chiefs of the patent section in that particular agency.

As a consequence of this, there is very little resemblance between patent and license policies in all of the agencies across the board. I think if some attempt could be made to have a more uniform standard of treatment of patent policy within all the agencies, and then each agency, depending upon a specific requirement, for example, the Defense Department has security problems it has to worry about and NASA doesn't generally have the security problems. So, that would be an element that would have to be considered in the patent policy for the Department of Defense that would not be of such a concern within NASA.

I think a general patent policy could be established that would cover the general attitude and treatment of patents and licenses within the Federal laboratories and within the Federal agencies, and then be modified only when it was necessary by the particular requirements of a specific agency.

Mr. Walgren. I appreciate that testimony very much.

Are there any second thoughts that any of the witnesses would like to raise at this point?

Mr. Alexander.

Mr. Alexander. I would like to disagree with Dr. Shaw. I would like to point out that the policy of this administration and the policy of Congress is exhibited by the present law on small businesses and universities and by the memorandum of the President. The question here is should the policy as expressed be extended to big business?

I think that there is no reason, and I haven't heard a reason, why big business should be treated differently than universities and small businesses. I think the policy has been established that it is advantageous to have a uniform patent policy for Government agencies. One of the reasons for including big business in this policy is because the incentive for big business to get into these contracts is not there unless they have a uniform patent policy. I think that has been expressed by almost everyone here.

Dr. Shaw. My reply to that would be that small businesses, in general, are more innovative, and this is borne out by statistics, than larger businesses in terms of implementing new technology products. Now, they are not the most successful in developing the markets for the products. The small businesses can get by with a much smaller range of products and much smaller annual revenues and smaller gross margins. They can squeak by.

Generally, these products that they come up with are developed to a greater extent by the larger companies and carried on to develop huge markets. This goes for anything from computers to recorders to semiconductors. The incentive for commercialization of any product is profit potential. With larger companies standing to gain more profit, I think it is only reasonable that they be requested to pay a nominal license fee. I am not saying a huge license fee or a royalty that goes on for 1,000 years, but just a small nominal license fee as NASA has negotiated with some of these companies.

Some of the technology that we have transferred within NASA under license to companies, we have had absolutely no objection from the companies to paying a nominal license fee, because they perceived the profit potential in the technology that they were acquiring. For a small company, it just simply couldn't afford the license fee.

Mr. **Manbeck**. May I comment, Mr. Walgren?

Mr. **Walgren**. Certainly, Mr. Manbeck.

Mr. **Manbeck**. Let me say that in no way do I want to say anything which denegrates NASA which has certainly provided a great service to this country. However, I must take issue with the theory that small businesses are more innovative. Small businesses may be more innovative in small things. I don't know. However, there are many major things which large companies with significant research staffs must take on or it is the only way which these important items are going to come into the national marketplace.

I have here some Aviation Week articles dealing with an unducted fan arrangement which General Electric Co. is currently working on with NASA. This unducted fan, if successful, and our people believe it is going to be, will provide engines which I believe are about 25 percent more fuel efficient for commercial aircraft.

Obviously, when this development role is done, it is going to take all kinds of corporate money to bring these engines to the commercial marketplace. It is important to us that we have patent rights. It is also important to us that we make money.

We are troubled by fees just as much as the small company. I can give you chapter and verse why royalty charges by the Government don't make any sense, but I won't go into that unless you want me to.

However, I disagree 100 percent that big businesses are not innovative and also that they don't need the same incentive to put the commercialization funds in which may be immense if these products are to be brought to the marketplace.

Mr. **Walgren**. I know that, of course, in the Congress it is easier to do something for small business than it is for big businesses. Depending on your faith in other parts of the system such as antitrust, you are more able to know that some anticompetitive things are not happening in small businesses if you restrict yourself to small businesses.

I don't know how we could ever take account of one possibility and that is the political influence of the big company driving the research or causing the Government to engage in a certain course of action for which they then are the researcher. Because they are able to make the Government want to do this, that they are able to piggyback on something that no small business per se would quite have the same degree of influence to do. I don't think there is any way to quantify that aspect.

Mr. MANBECK. Mr. Walgren, I think there is a place for big businesses and for small businesses. The country needs them both.

Mr. WALGREN. Dr. Shaw?

Dr. SHAW. I am in agreement with Mr. Manbeck there. I am not arguing that small business is better than big business or vice versa. Each of them have different capabilities. For example, a small business is motivated generally by personal motivation of the entrepreneur to get out and do something. That is his big thrill in life, and he will take extraordinary risks that a large business would not undertake. He will run the potential of destroying himself to get something off the ground. Now, it may not be of great commercial portent. It may be only to try to manufacture a better grade galium arsenide using the space shuttle. To him, that is an all out risk. That is his whole life he is risking.

For a large business, that would only be a small risk. And I agree that there is no small business that could undertake the development of a by-pass fan jet.

If we look at some of the examples from the past, say, solar cells, and we look at that technology within the United States and how that progressed, the initial demands for solar cells were for light weight power for satellites and to replace heavier nuclear alternate sources for satellites. These were developed primarily under Government contract by predominantly one company. That company is no longer the major force in solar energy in the United States, even though they had the patent rights to the technology at that time. They were concentrating on building expensive, high performance cells for space use.

Other companies stepped in, perceived the commercial opportunity, and from there on developed a basic technical process which allowed them to manufacture solar cells that have reduced capability that are satisfactory for Earth but at a much lower price. In that process, of course, many of these companies did obtain Government contracts to facilitate their work in solar cells, but the majority of those were cost-shared contracts, because they realized the potential of retaining the patents that they would be generating during this development process.

Fortunately or unfortunately, the oil companies were the only ones in the United States that seem to have the resources at that time to put into the development of solar cells. Right now, the oil companies are the dominant sources of solar cells for terrestrial applications in the United States.

This has tended to be the type of development progress made by Government sponsored basic research. You can even go all the way back to developments of integrated circuits and this sort of work. It has been done by one company under a Government contract and then it has expanded throughout a number of companies to form the basis of an industry based on other companies' perceiving the value, doing their own research, generating their own patents, defending their own patents, and generating their own markets and differential products.

Mr. WALGREN. Well, I want to express the committee's indebtedness to you. We appreciate the time you have given to this. We look forward to trying to work with the concerns that you have raised and the points that you have underscored in the process of your testimony.

Thank you very much.

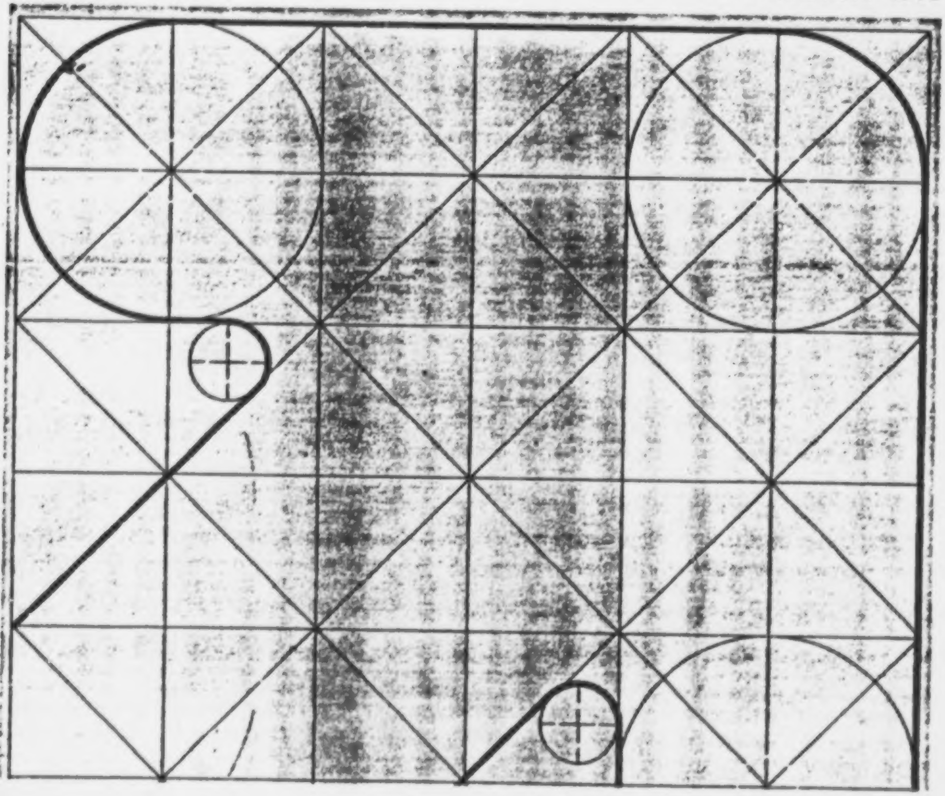
The subcommittee will be adjourned.

[Whereupon, at 11:48 a.m., the subcommittee recessed, subject to the call of the Chair.]

APPENDIX

STIMULATING TECHNOLOGICAL PROGRESS

A STATEMENT BY THE RESEARCH AND
POLICY COMMITTEE OF THE
COMMITTEE FOR ECONOMIC DEVELOPMENT
JANUARY 1980



CHAPTER 6

PATENTS AND THE INNOVATIVE PROCESS

Patent law is one of the three branches of law that regulate the ownership and use of intellectual property. Trade secret law and copyright law are the two other branches. In the field of technology, patent and trade secret laws overshadow copyright laws.

Intellectual work can be owned and can otherwise assume the elements of property only to the extent provided by law. This characteristic of property, the "appropriability of exclusive rights" to innovative work, largely determines whether such work is reproduced on a commercial scale. If the results of innovative work were freely available to all who might copy or steal them, there would be little reason to invest in research and development. The property rights created under the patent and trade secret laws are thus important, perhaps often essential, to the willingness of prudent businessmen to sponsor research and development and to invest in the facilities needed for innovative products.[1]

There are a number of key distinctions between patents and trade secrets. A patent owner has rights superior to those of a second inventor who makes the same invention; whereas a trade secret proprietor has no rights against a later discoverer of the same trade secret. U.S. patents run for a term of seventeen years from the date of the grant; whereas the life of a trade secret is indeterminate. Patents are obtainable only through disclosing to the public the invention and the preferred manner in which it is practiced; whereas trade secrets depend for their existence on being known to only a few. Thus, if an invention is ascertainable from a product as sold, the only real protection available is through the patent system.

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[1] Although patents generally play an important role in stimulating technological progress, their importance varies among different types of technology. Because of the nature of some technology, the patent may not provide an effective property right.

An efficient patent system meets three criteria: The first is accessibility; the system should be simple, inexpensive, and available to everyone. The second is reliability; the system should allow a person who receives a patent, as well as those who are asked to respect the patent, to know the bounds of the protection and to rely on the patent's ability to stand up under litigation. The third is selectivity; the system should protect and encourage significant discoveries without burdening the public with patents on minor and obvious variants of what was previously known. The inventive contribution must be worthy of the protection provided by the government.

A patent is sometimes regarded as a limited monopoly, but in fact, that is rarely the case. Usually, a patent covers only a specific product, product feature, or process in such a way that unpatented design alternatives almost always exist.

ROLE OF PATENTS

Patent laws (and trade secret laws, when applicable) make developed technology a controllable property. The ability to control a new technology as property determines in large measure whether new-technology development will be undertaken at all.

Patents reward the innovator in a number of different ways. One use of patents is licensing, under which others are permitted to practice the invention in return for royalty payments. Patents are also used to reserve a particular product feature or process for the exclusive use of the patent owner, although probably not so often as is commonly believed. Occasionally, patents are used as trading stock for freedom to operate under the corresponding patents of others.

Another common role of patents is to provide the basis for acquiring counterpart patents in other countries for use in connection with product sales in those countries. Where export sales may be impractical, patents can be used to support licensing in foreign countries.

The number of U.S. patents issued annually has reached a plateau of approximately 75,000. However, the number of patents issued to foreign corporations has been increasing for some time by more than 1,000 a year and is nearing an annual level of 30,000 patents. In 1977, 37 percent of all

U.S. patents issued were granted to foreigners. There has been a steady and noticeable decline in U.S. patents issued to U.S. residents.

There is an obvious correlation between patents granted and research and development undertaken. The recent decline in U.S. patents issued to U.S. residents may be due to the fact that although total R & D activity has not decreased, work in potentially patentable areas has fallen off. Diversions of technology to such areas as environmental protection, energy conservation, compliance with certain government requirements, and development of computer software have had an adverse effect on the output of new patents. Diversion of technology to short-range needs from longer-range, more creative work has also been cited as a cause of the decline.

CHANGES IN PATENT POLICY TO ENHANCE THE INNOVATIVE CLIMATE

There are several possible ways in which the contribution that the patent system makes to invention and innovation processes can be enhanced.

FIRST-TO-FILE PATENT SYSTEM When two or more applicants seek a patent for substantially the same invention, the U.S. patent system provides for interference, a procedure to determine who first made the invention. That party will be entitled to the patent to the exclusion of those who invented later. The interference starts out as a quasi-judicial proceeding in the Patent and Trademark Office (PTO) and occasionally reaches the federal courts as full-scale litigation.

Patent interferences are highly technical proceedings and are of questionable efficacy in determining the first inventor. Much time is spent proving what happened before the filing dates, trying to prove that the inventor was incorrectly named, did not really have the invention in hand, failed to discharge various obligations, and so on. In a significant majority of interferences, the patent is eventually awarded to the first to file.[2]

The United States and Canada are unique among all the industrial countries of the world in utilizing the interference approach. European countries have always considered that a patent should go to the first party to file an application. The new European patent system, which all European Economic Community countries have now adopted, provides a personal defense to the individual who can show he was actually the first to invent and took steps toward use. (Participants in this system include the United Kingdom, France, West Germany, and Holland.)

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[2] According to a survey by a major corporation, although approximately 110,000 U.S. patent applications are filed each year, only 75 to 80 interference procedures produce a result different from the first-to-file system.

Because the purpose of the patent system is to encourage disclosure to the public, the party who is first to file should be rewarded. Adoption of a first-to-file system would eliminate patent interference proceedings, simplify patent litigation, make patent validity more certain, and serve the interests of the inventor and the public in a more efficient manner.[3]* Most objections to the system could be answered by provision to grant a prior inventor a personal right to use the invention. Such a right would be contingent on not having abandoned the invention and should require proof of steps taken toward commercialization.

REEXAMINATION OF PATENTS When considering patent applications, the PTO frequently does not take into account all relevant prior patents or other background material. In the relatively short time that patent examiners have to search for pertinent information, they cannot be expected to find all the prior references, particularly those from foreign countries, that potential defendants in infringement suits may be able to uncover. At present, a patent owner faced with new references brought forward by an infringer can ask for a reissue of the patent to overcome those references. The reissue patent is a substitute for the original patent and expires on the same date as the original, but the scope of its coverage is usually different.

This system should be continued and encouraged. Anyone opposed to the reissue, either wholly or in part, has the opportunity to submit references and to present written arguments. That practice, too, should be continued. We do not suggest that a full adversary proceeding be established in the PTO; such a system would increase both the time and expense involved in the reissue proceedings.

If the patent for which reissue is sought is already in the courts, the judge should retain the discretion to stay the action and allow for the reissue. Such a procedure may often allow for greater certainty in the proper coverage of the patent and consequently reduce the amount of judicial time required. On other occasions, the reissue procedure may be insufficient because oral testimony, for example, may be essential to explain the references and other background matter submitted by the defendant. In such cases, the judge might properly refuse to stay the suit. **We believe that the present procedure is reasonably satisfactory insofar as the patent owner is concerned and that it should not be changed with respect to their opportunities.**

3/ The pharmaceutical and agricultural chemical industries have questioned the applicability of the first-to-file system. They believe that the present system is preferable in their businesses, given the extensive testing required to prove practical results.

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*See memoranda by J. PAUL LYET and MARK SHEPHERD, JR., page 73.

However, a new right should be provided to defendants or potential defendants faced with adverse patent claims. **If a defendant feels that his references are strong enough to invalidate the patent without the need for, or expense of, a trial, we recommend he should have the opportunity to take his references to the PTO and ask for reexamination of the patent in light of those references.** In other words, the defendant should be able to call for a PTO action (akin to the reissue proceedings) that might result in a PTO decision that the patent should not have been granted. In certain situations, particularly when patents without merit are involved, such proceedings would save the time and expense of a trial. To that end, the judge should have the discretion to stay any trial proceeding pending the outcome of a PTO reexamination requested by the defendant. The reexamination procedure should require that the person requesting it pay fees that will approximate the PTO costs involved.

In recent years, the concept of a reexamination of issued patents appeared in various congressional bills, some of which have been supported by the American Patent Law Association; the Patent, Copyright and Trademark Section of the American Bar Association; the New York Patent Law Association; and others. **We support the efforts of Congress to improve this feature of patent policy[4] and believe that a reexamination procedure will increase certainty in the patent system at a relatively modest cost to all involved.**

ARBITRATION OF PATENT DISPUTES Commercially important patents often invite controversy. Competitors interested in the patented product or its equivalents frequently disagree with the patent owner concerning its true scope and value. A suit in the federal courts may result. Protracted pretrial procedures and the difficulties of dealing with technical subjects tend to make the litigation very expensive, often $500,000 or more for each party.

Patent litigation itself is also protracted. A suit on an important patent will commonly take years to resolve. The cost and time required for litigation detract from the ability of patents to foster innovation. The cost of enforcing patents may very well influence business to invest in programs that are less risky than the research and development needed for innovation and productivity gains.

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[4]/ Through proposed rules published as 43 Fed. Reg. 59401 (December 20, 1978) and later withdrawn, the Commissioner of Patents and Trademarks raised the possibility that a limited reexamination procedure could be established in the PTO based on his rule-making authority. However, we believe a statute is needed because the commissioner cannot provide for court review of PTO decisions or authorize cancellation of patents found to be invalid, features that are required for an acceptable reexamination system.

The patent owner shoulders the burden of detecting infringement and enforcing the patent through civil action in a federal district court. The federal courts have not been inclined to share their exclusive jurisdiction over patents because the validity of a patent appears to hold such public interest that settlement of a controversy through arbitration is inappropriate. The cost of enforcing or defending against a patent in court could amount to several hundred thousand dollars for each party. To reduce the cost and time required for the resolution of certain patent disputes, arbitration should be available for those who wish to use it. **We believe that arbitration should be a legitimate method for solving patent problems.** Arbitration is common in resolving disputes in almost all other commercial areas, including very large labor settlements, and it is difficult to see why it should not be allowed for patent questions.

Although compulsory arbitration cannot be required because such a requirement would be a violation of due process, it should be available when both parties wish to use it voluntarily. The results of arbitration are, of course, binding only on the participants. **We therefore recommend that public policy be modified to permit voluntary arbitration of patent disputes, including questions of both infringement and validity.**[5]

ADDITIONAL RECOMMENDATIONS ON PATENT POLICY

This Committee believes that a number of additional changes in patent policy would contribute to greater innovation in the U.S. economy. Many of these changes may appear quite minor in themselves, but their combined effects on future innovation could be quite substantial. These recommendations and the analyses supporting them are discussed in Appendix B "Supporting Analyses for Additional Changes in Patent Policy."

In summary, this Committee recommends the following additional patent policy changes:

- A single patent appeals court should be established to eliminate the current problem of inconsistency in precedents between existing Circuit courts.
- The recommendations of the 1978 National Commission on New Technological Uses of Copyrighted Works should be implemented to provide legal protection to the authors of computer programs and to

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[5] To our knowledge, very little data on arbitration in patent cases exist. However, information provided by the American Arbitration Association shows that in a sample of 200 commercial arbitrations in the construction field the time from filing to issuance of an arbitrator's award averaged less than four months. The savings in time and money would be substantial if anything like this could be attained in patent cases.

assure that rightful processors of copies of computer programs can use or adopt those programs for their own use.

- U.S. owners of patented processes should be able to enforce their patents against goods made abroad with those processes and then imported into the United States.
- A patent owner should be able to receive an extension of a patent's life equal to the length of government regulatory delays.
- So that government-funded research and development will be used for commercial products, government contractors should in most instances receive title to the inventions and patents made under government contract.
- Government-owned patents should be licensed to all domestic manufacturers on a royalty-free basis.*

The Committee also feels that given the PTO's importance in the innovation process, it is vital to provide adequate funding to eliminate the unnecessary backlog in the work of that office.

Proposals for *mandatory licensing* of government patents and the *reimbursement of government seed money* when commercialization of patents that received government assistance is successful do not appear to us to have any merit. We also reject the concept of *periodic maintenance fees during the life of patents* as a means of reducing the number of worthless patents that continue on the rolls since there would be no positive effect on domestic industrial innovation and foreign competitors might be assisted in U.S. markets.

There are two features of patent policy that we believe deserve examination in future policy development. First, the concept of *shorter-term lesser patents,* which is used in Germany and Japan, should be considered for future introduction in the United States. Such patents are designed to protect minor advances in technology and are worth evaluating. Second, although the Committee offers no specific policy recommendations on how to improve *patent protecton in Third World countries,* we do believe that the government has a responsibility to work with other industrial countries in dealing with this potentially important issue. We believe that the United States should encourage, where appropriate, the establishment of effective laws to protect property rights in inventions and innovation while avoiding any improper interference in the affairs of other countries. This should include the establishment of effective patent laws in Third World countries.

***See memorandum by JOHN D. GRAY (Omark Industries), page 74.**

Page 57, by JOHN D. GRAY (Omark Industries)

Royalty-free licensing of government-owned patents which require additional development work and commercialization really does not provide incentive for a manufacturer to undertake the pioneering process and then let other competitors, several years later, come in free on his efforts. I suggest a policy on those patents which need pioneering work and commercialization stating that the pioneering licensee be given a royalty-free, five-year lead period with the five-year period to run from the time the product is first put on the market in a reasonable quantity and with the requirement that the licensee must commercialize the concept within two years after being licensed. During that five-year period, the pioneering licensee would have the right to sublicense and keep one-half the royalty and pay the government the other one-half.

At the end of the five-year, royalty-free pioneering license period, the pioneering licensee, his sublicensees and all newcomers would then be licensed at competitive industry rates with the pioneer licensee to receive a 25 per cent lower rate as compensation for his early pioneering commercialization work.

This suggested policy would apply to all patents not deemed important to national defense, security, etc.

APPENDIX B

SUPPORTING ANALYSES FOR ADDITIONAL SUGGESTED CHANGES IN PATENT POLICY

The analyses in this appendix supports the suggested changes in patent policy outlined in Chapter 6.

SPECIAL PATENT APPEALS COURT

Honest irreconcilable differences occasionally dictate the need to litigate patent questions. Unfortunately, there are sometimes material differences in legal precedents about patents among different judicial circuits. The precedents in one circuit may indicate a favorable result for the plaintiff, but the precedents in another circuit may not. Because the result of the litigation can be affected or even determined by the circuit selected, the selection process, including the practice of the parties attempting to select the circuit that will be most favorable to their point of view, frequently becomes a major added complication.

We recommend a single court of patent appeals. Such a court would help eliminate much of the costly procedural maneuvering at the early stages of patent litigation now devoted solely to selection of the forum. A single court of appeals would also contribute to greater certainty in the predicted outcome of patent litigation. That is, a single court would tend to develop a more cohesive body of precedents than the many independent circuit courts do and might reduce the number of patent suits brought.

Although there might be difficulties in the handling of issues ancillary to patent validity and infringement, we believe that a single court would contribute far more to the value of the patent system than it would detract from it.

COMPUTER SOFTWARE PROTECTION

An increasing proportion of money invested in research and development is being applied to the information processing field. The resulting computer programming (software) has not been afforded the same legal protection given to other technology. Although some software may find limited protection under the patent system or copyright, much appears to be protected by its owners as trade secrets.

There have been numerous recommendations that the present copyright statute be amended to protect computer programs. One such amendment is set forth by the National Bureau of Standards and the National Commission on New Technological Uses of Copyrighted Works, which made the following recommendation to the President of the United States on July 31, 1978:

> The new copyright law should be amended (1) to make it explicit that computer programs, to the extent that they embody an author's original creation, are proper subject matter of copyright; (2) to apply to all computer uses of copyrighted programs by the deletion of the present Section 117; and (3) to assure that rightful processors of copies of computer programs can use or adapt these copies for their use.

We urge that the recommendation of the National Bureau of Standards and the National Commission on New Technological Uses of Copyrighted Works be implemented.

PROTECTION OF PROCESS PATENTS AGAINST IMPORTS

A problem of patent enforcement which may discourage investment in process development, is the powerlessness of a United States patent over products produced abroad by that process and brought into this country. A proceeding currently before the U.S. International Trade Commission may lead to the exclusion of such goods, but it has not proven satisfactory to many patent owners. Unlike the United States, other major countries do allow a process patent to be enforced through an infringement suit against foreign-made goods brought into the home country of the patent.

In order to encourage investment in process innovation, we believe that patent owners should be able to enforce patents against goods made abroad by use of the patented processes and then imported into the United States. Such a right would not bar the importation of identical goods not made by the patented process, but would secure to the patent owners what should be rightfully theirs.

ADJUSTING TO PATENT TERM OF GOVERNMENT-CAUSED DELAYS

Government regulatory delays in clearing products for commercialization often shorten the effective life of a patent and undermine its value. This is particularly true in the cases of agricultural chemical products (which must be registered by the EPA) and pharmaceutical products (which must be cleared by the FDA). It is also true in other fields, for example, in the electronics industry in connection with the standardization of a particular color television system by the Federal Communications Commission.

The reduced values of such patents occur because, in many cases, the patent becomes effective a number of years before the products themselves can appear on the market. Thus, the patents expire relatively early in the commercial lives of the products, which enables potential infringers to get into the field quite soon without having to design around the patents or develop competing new products. Furthermore, the time in which the innovators of the products can recoup their investments is shortened.

In our opinion patent owners should be able to receive extensions on their patent equal to any government regulatory delays. To provide balance, there should be some maximum length of time for any extension as well as a precise definition of the kinds and causes of regulatory delays that might qualify patents for extensions. An alternate approach would be to allow patent owners to delay the effective date of their patent protection until any necessary government approvals for marketing the patented products are obtained.

GOVERNMENT CONTRACTOR POLICY

Until the 1970s, much (if not most) of such federal funding was spent on military and space programs. In recent years, there has been a growing emphasis on development programs in other areas, such as energy. It is clearly in the national interest that the technology developed by federal funding be made available for use by private industry in providing products and services for the general public. In many areas of government, however, patent policies have been instituted either through statute or through agency rule making, which seem to discourage commercialization of the results of federally funded research and development.

Experience has shown that the company handling the government contract is most likely to carry the results of government-funded research and development to the marketplace. If the contractor must turn the rights back to the government or if competitors can quickly copy the product (e.g., by reverse engineering) without any patent deterrent, there is much less reason for the contractor to risk funds in commercialization. The same principle applies to the results of government-funded research and development done by nonprofit contractors such as universities. Unless the universities get substantial rights from patents, there is absolutely no incentive for them to establish technology transfer and patent programs that may lead to commercialization of the research.

To encourage the use of government-funded research and development for commercial products, contractors should, in most instances, receive title to the inventions and patents made under government contract. However, the government should be able to require the contractor to license others in certain circumstances (e.g., if the contractor fails to produce enough products to supply the market).

In some instances, it may be best for the government to take the title. For example, a regulatory agency may fund a development and then adopt it as a national standard for commercial products. To prevent economic dislocation in such a case, it is desirable that all competitors receive the same royalty-free right to use the required technology or feature.

Government patent policy could be further extended to improve procedures through which the government can more promptly and more readily recognize valid patents bearing on government activities. It is also important to discourage any contracting practices needlessly tending to appropriate privately developed rights of the contractor in existing patents or data.

GOVERNMENT-OWNED PATENTS

A substantial portion of government R & D funding goes to support laboratories and other activities that are integral parts of government agencies. The unclassified technology developed by these laboratories has normally been patented, presumably to make sure that it becomes known to the public.

However, the administration of such patents presents a situation that is conceptually less straightforward than administration of patents generated from contractor-developed technology. Not having developed the technology, the commercially oriented engineers are likely to have, or at least to envision, different ways of accomplishing the same end. Thus, there is at least some question whether internally generated government patents serve as an effective tool for commercialization.

Such patents can certainly discourage manufacturers if they fear that the government will claim that they have the patent right to the product or process. **The best course is probably to license the internally generated government patents on a royalty-free basis to all domestic manufacturers.** In that way, the patents would serve to publish the technology and at the same time would not deter commercialization. (The patents could, however, serve to protect efficient domestic production from foreign dumping; and in the rare instance where exclusive licensing might be needed to elicit money for commercialization, such licensing could be contemplated.)

In many instances government patents are taken out solely for defensive reasons (i.e., to publish results of the technical work without any thought of the patents having commercial value). In view of the very large number of patent applications filed by the government each year on inventions made by government employees (averaging 1,332 applications a year for fiscal years 1963 to 1975), we believe that the work load of the PTO could be substantially reduced if this so-called defensive filing were eliminated by the government agencies.

We suggest the establishment of a technical journal for the publication of selected government inventions. Such a journal would publish descriptions of those inventions on which patents are not needed for national security purposes. In this way, the government would be protected against adverse claims by later inventors, the technology would be made available to interested parties, the government inventors would receive recognition, the PTO work load would be greatly reduced, and the government patenting costs would be decreased.

OBJECTIVES OF THE COMMITTEE FOR ECONOMIC DEVELOPMENT

For thirty-five years, the Committee for Economic Development has been a respected influence on the formation of business and public policy. CED is devoted to these two objectives:

To develop, through objective research and informed discussion, findings and recommendations for private and public policy which will contribute to preserving and strengthening our free society, achieving steady economic growth at high employment and reasonably stable prices, increasing productivity and living standards, providing greater and more equal opportunity for every citizen, and improving the quality of life for all.

To bring about increasing understanding by present and future leaders in business, government, and education and among concerned citizens of the importance of these objectives and the ways in which they can be achieved.

CED's work is supported strictly by private voluntary contributions from business and industry, foundations, and individuals. It is independent, nonprofit, nonpartisan, and nonpolitical.

The two hundred trustees, who generally are presidents or board chairmen of corporations and presidents of universities, are chosen for their individual capacities rather than as representatives of any particular interests. By working with scholars, they unite business judgment and experience with scholarship in analyzing the issues and developing recommendations to resolve the economic problems that constantly arise in a dynamic and democratic society.

Through this business-academic partnership, CED endeavors to develop policy statements and other research materials that commend themselves as guides to public and business policy; for use as texts in college economics and political science courses and in management training courses; for consideration and discussion by newspaper and magazine editors, columnists, and commentators; and for distribution abroad to promote better understanding of the American economic system.

CED believes that by enabling businessmen to demonstrate constructively their concern for the general welfare, it is helping business to earn and maintain the national and community respect essential to the successful functioning of the free enterprise capitalist system.

American Chemical Society

OFFICE OF THE
PRESIDENT
Warren D. Niederhauser
President-Elect, 1983
President, 1984
Immediate Past President, 1985

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May 29, 1984

The Honorable Don Fuqua
Chairman
Committee on Science and Technology
U.S. House of Representatives
Washington, D.C. 20515

Dear Congressman Fuqua:

The American Chemical Society (ACS), a nonprofit scientific and educational organization with a membership of over 131,000 chemists and chemical engineers, appreciates the opportunity to comment on H.R.5003, the Uniform Science and Technology Research and Development Utilization Act of 1984. Since many of our members are inventors, the subject of government patent policy is of vital interest to the Society. The following comments have been reviewed and approved by the Society's Board of Directors.

During the 96th Congress, the Society supported the enactment of P.L.96-517, which addressed the disposition of patent rights resulting from federally-funded research carried out by nonprofit organizations and small businesses. Although the Society supported enactment of that public law, it believed then, and continues to believe now, that title to the patent should be extended to all contractors, as there is little basis for differentiating between small and large contractors in this regard. The ultimate objective--exploitation of inventions resulting from government-supported research to serve the public good--should not be dependent upon the nature of the entity doing the research. ACS is pleased to see this matter being taken up again and urges the Subcommittee to act upon H.R.5003 in an expeditious manner.

The Society firmly believes that innovation will be fostered by a uniform government patent policy provided that such a policy encourages the commercial development of inventions and technological advances. Technological innovation underlies and supports modern society. Strong and continuous efforts to enhance and expand technological innovation result in high standards of living as witnessed through the history of the United States. Every effort should be made to encourage and strengthen technological innovation so that these benefits are maintained and expanded. Continued and consistent encouragement of innovation must be a national policy if we are to find solutions to increasingly complex social, economic, and environmental problems.

Patent policies differ markedly among agencies, particularly with respect to the determination of ownership of patents resulting from federally-funded research and development. These differences lead to uncertainties, have a dampening effect on invention and industrial innovation, and have resulted in underutilization of the results of federally-funded research. Hence, a uniform federal patent policy designed to foster industrial innovation is essential.

If disposition of rights under a patent resulting from federally-funded research and development is in doubt, or if the contractor cannot foresee a reasonable return from a successful development of the patented invention, then the benefits of the invention are less likely to be made available to the public whose taxes supported the original research. It is the Society's view that giving contractors assurance of exclusive rights would achieve greater utilization of these patents. The grant of exclusive rights in H.R.5003 is necessary to induce companies to furnish the additional funds needed for development and commercialization of inventions.

The ACS believes that, in general, the allocation of rights under H.R.5003 is fair. When a contractor elects to retain title to the invention, the government will have a non-exclusive, non-transferrable, irrevocable, paid-up license. A contractor who does not elect to retain title will have a non-exclusive, royalty-free, world-wide license, revocable only to the extent necessary for the government to grant an exclusive license to another party.

The provision for "march-in" rights in H.R.5003 appears to be reasonable. In a situation where the contractor is not taking sufficient steps to commercialize the invention, H.R.5003 allows the government to force the contractor to license a third party to do so.

ACS is aware of the argument offered by some who contend that to permit the contractor to take title to inventions made under federally-funded contracts, without reimbursing the government for at least part of its expenses, amounts to a "give-away" of public funds. The Society would not be opposed to a provision being added to H.R.5003 that would allow the government to recoup at least a portion of the original costs. Mechanisms for recoupment might be through the sharing of income accruing to contractors who have rights to inventions resulting from such research, or through other payments based upon the contractor's use of the invention. A reasonable arrangement might be to apply a negotiated percentage against gross royalty income or actual sales to produce a predetermined recoupment amount.

It should go without saying that recoupment procedures should be administratively workable and uncomplicated. Such procedures also should be established only after an opportunity has been provided for public comment, and after careful study of all views.

There are two provisions of H.R.5003, however, that cause great concern to the ACS. The first one would allow an inventor to obtain patent rights if a contractor does not elect to retain worldwide title to an invention. The extent of this proposal as presently drafted is not clear. The ACS urges that this provision be deleted, or that its language be developed in greater detail in order to define its scope.

The Society's second concern relates to subparagraphs "(b)" and "(c)" under the section on background rights. While subparagraph "(a)" states that H.R.5003 does not deprive the owner of any background patent or patent rights, the next two subparagraphs in effect authorize compulsory licensing. The ACS strongly opposes compulsory licensing to third parties of inventions owned by the contractor, when such inventions did not arise from federally-funded research.

In addition to the provisions concerning large businesses, H.R.5003 also modifies P.L.96-517 by removing the eight-year cap on the term of any exclusive license that a small business or non-profit organization can grant to a large firm. The ACS supports this proposal and believes that it will allow P.L.96-517 to fulfill its goal of promoting the utilization of the results of federally funded research.

In conclusion, the American Chemical Society believes that the subject of a uniform federal patent policy has been debated sufficiently over the years and that the time has now come for action. The Society is ready to provide any assistance it can to ensure swift consideration of this important legislation, and commends Senator Dole for introducing it.

Sincerely yours,

Warren D. Niederhauser

Warren D. Niederhauser

I

98TH CONGRESS
2D SESSION

H. R. 5003

To establish a uniform Federal system for management, protection, and utilization of the results of federally sponsored scientific and technological research and development, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

MARCH 1, 1984

Mr. **FUQUA** (for himself, Mr. **BROWN** of California, Mr. **WALGREN**, Mr. **BOUCHER**, Mr. **SENSENBRENNER**, and Mr. **GREGG**) introduced the following bill; which was referred jointly to the Committees on the Judiciary and Science and Technology

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A BILL

To establish a uniform Federal system for management, protection, and utilization of the results of federally sponsored scientific and technological research and development, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Uniform Science and Technology Research and Development Utilization Act".

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TITLE I—POLICY

FINDINGS

SEC. 101. The Congress, recognizing the profound impact of science and technology, finds and declares that—

(1) the United States has recently experienced a decline in industrial innovation and productivity which adversely affects domestic productivity, the rate of economic growth, the level of employment, the balance of trade, and the attainment of other national goals;

(2) the national support of scientific and technological research and development is indispensable to sustained growth and economic stability, and it is in the national interest to maximize the benefits to the public from such investment;

(3) inventions resulting from Government-sponsored research and development constitute a valuable national resource which should be developed in a

manner consistent with the public interest and the equities of the respective parties;

(4) current Federal policy with respect to the allocation of rights to the results of Government-sponsored research and development delays technological progress, and inhibits commercial utilization of those results; and

(5) there is a need for the establishment and implementation of a flexible Government-wide policy for the management and utilization of the results of Government-sponsored research and development, and this policy should promote the progress of science and the useful arts, encourage the efficient commercial utilization of technological developments and discoveries, guarantee the protection of the public interest in the United States and foreign countries, and recognize the equities of the contracting parties.

PURPOSE

SEC. 102. It is the purpose of this Act to—

(1) establish and maintain a uniform Federal policy applicable to the management and use of the results of Government-sponsored science and technology research and development to stimulate more widespread commercial utilization of those results for the public good;

(2) insure the effective uniform implementation of the policy created by this Act, and provide for monitoring on a continuing basis the impact of such policy and its implementation on innovation and technology development;

(3) allocate rights to inventions by contractors which result from Government-sponsored research development so as to—

(A) encourage the participation of the most qualified and competent contractors,

(B) foster competition,

(C) reduce the administrative burdens, both for the Federal agencies and their contractors, and

(D) protect the public investment in research and development by promoting the widespread utilization of inventions;

(4) provide measures to protect United States interests in foreign countries regarding the results of Government-sponsored science and technology research and development; and

(5) amend or repeal other Acts and Executive orders regarding the allocation of rights to inventions which result from Government-sponsored research and development.

TITLE II—IMPLEMENTATION

FUNCTIONS OF THE FEDERAL COORDINATING COUNCIL FOR SCIENCE, ENGINEERING, AND TECHNOLOGY

SEC. 201. (a) The Federal Coordinating Council for Science, Engineering, and Technology (established by section 401 of the National Science and Technology Policy, Organization, and Priorities Act of 1976 (42 U.S.C. 6651) (hereinafter in this section referred to as the "Council") shall make recommendations to the Director with regard to—

(1) uniform and effective planning and administration of Federal programs pertaining to inventions, patents, rights in technical data, and matters connected therewith;

(2) uniform policies, regulations, guidelines, and practices to carry out the provisions of this Act and other Government objectives in the field of intellectual property; and

(3) uniformity and effectiveness of interpretation and implementation by individual Federal agencies of the provisions of this Act and other related Government policies, regulations, and practices.

For the purpose of assuring effective management of Government-owned inventions, the Secretary of Commerce shall chair a committee of the Council to formulate the recommendations required by this subsection.

(b) Recommendations regarding matters set forth in subsection (a) which are made by the Council and adopted by the Director shall be transmitted to Federal agencies through appropriate channels.

(c) In order to carry out the responsibilities set forth in subsections (a) and (b), the Council is authorized to—

(1) acquire data and reports from Federal agencies on the interpretation and implementation of this Act and related policies, regulations, and practices;

(2) review on its own initiative, or upon request by a Federal agency, Federal agency implementation of the provisions of this Act;

(3) analyze, on a continuing basis, data acquired by the Council;

(4) consider problems and developments in the fields of inventions, patents, rights in technical data, and matters connected therewith and the impact thereof on Government policy or uniform accommodation or implementation by Federal agencies; and

(5) publish annually a report on Council efforts, findings. and recommendations made under this section, which report shall include—

(A) relevant statistical data regarding the disposition of subject invention disclosures resulting from Government-sponsored research and development, including those inventions disclosed by small businesses and nonprofit organizations;

(B) any legislative or administrative recommendations to better achieve the purposes of this Act; and

(C) an analysis of the impact of Federal policies on the purposes of this Act.

FUNCTIONS OF THE SECRETARY OF COMMERCE

SEC. 202. For the purpose of assuring the effective management of Government-owned inventions, the Secretary is authorized to—

(1) assist Federal agency efforts to promote the licensing and utilization of Government-owned inventions;

(2) assist Federal agencies in seeking and maintaining protection on inventions in foreign countries, including the payment of fees and costs connected therewith;

(3) consult with and advise Federal agencies as to areas of science and technology research and development with potential for commercial utilization;

(4) promulgate regulations as described in section 301(c);

(5) publish notification of all owned inventions that are available for licensing; and

(6) evaluate inventions referred by Federal agencies, and patent applications filed thereon, in order to identify those inventions with the greatest commercial potential and to insure promotion and utilization by the public of inventions so identified.

TITLE III—ALLOCATION OF RIGHTS

RIGHTS OF THE GOVERNMENT AND THE CONTRACTOR

SEC. 301. (a) Subject to subsection (c) of this section and to section 303 of this Act, each contractor may elect to retain title, either worldwide or in such countries as it may choose, to any subject invention. Where not in violation of existing treaties or laws of the United States, a Federal agency may, at the time of contracting, limit or eliminate this right, place additional restrictions or conditions in the contract that go beyond those set forth in subsection (c) of this section, expand the rights of the Government to license or sublicense, and may alter or eliminate the contractor's right under subsection (c)(7) of this section if—

(1) it is determined by a Government authority which is authorized by statute or Executive order to conduct foreign intelligence or counterintelligence activities that this is necessary to protect the security of such activities;

(2) the contractor is not located in the United States or does not have a place of business located in

the United States, is a foreign government, or is subject to the control of a foreign government;

(3) the contract is entered into under a program that implements a formal international treaty, agreement, or arrangement, including, but not limited to, agreements of cooperation in science and technology or military agreements relating to weapons development or production, and it is determined by the agency that rights in the Government in any subject inventions beyond the license right provided in subsection (c)(3) of this section are necessary for the agency to fulfill its obligations under the international treaty, agreement, or arrangement; or

(4) the agency determines, on a case-by-case basis, that there are exceptional circumstances requiring such action to better promote the policy and objectives of section 102(3) of this Act.

(b)(1) Each determination made by a Federal agency under the authority of subsection (a) of this section shall be in writing and, except in the case of subsection (a)(1), the agency shall, within thirty days after the award of the applicable contract, file with the Secretary a copy of each such determination. In the case of a determination under subsection (a)(3) or (a)(4), the statement shall include an analysis supporting the determination and justifying the limitations and conditions being imposed. If the Secretary believes that any individual determination or pattern of determinations is contrary to the terms, policy, or objectives of this Act, the Secretary shall so advise the head of the agency concerned and the Director and recommend corrective actions.

(2) Whenever the Director has determined that one or more Federal agencies are utilizing the authority of subsection (a)(3) or (a)(4) of this section in a manner that is contrary to the terms, policy, or objectives of this Act, the Director is authorized to issue policies, procedures, and guidelines describing classes of situations in which Federal agencies may not utilize the provisions of subsection (a)(3) or (a)(4) of this section.

(c) In accordance with regulations issued by the Secretary after public comment, each contract shall employ a patent rights clause containing appropriate provisions to effectuate the following:

(1) that (A) the contractor disclose each subject invention within a reasonable time after it is made, and (B) the Government may receive title to any subject invention not disclosed within such reasonable time;

(2) that, unless the Government has acquired the right to title under subsection (a) of this section—

(A) the contractor make a written election, as to the retention of title to the subject invention within a reasonable time after disclosure under paragraph (1) of this subsection;

(B) the Government may, upon request, receive title to any subject invention in any countries in which the contractor has not elected to retain title within such time;

(C) if a contractor does not elect to retain worldwide title to a subject invention, the Federal agency may consider and, after consultation with the contractor, grant requests for retention of rights by the inventor on such terms and conditions as deemed appropriate by the agency and subject to section 303 of this Act;

(D) a contractor electing to retain title to a subject invention shall file patent applications within reasonable times;

(E) the Government may, upon request, receive title to any subject invention in any countries in which the contractor has failed to file patent applications within the reasonable times specified pursuant to subparagraph (D) of this subsection; and

(F) in any case when a Federal agency employee is either—

(i) a coinventor with a contractor employee of a subject invention, or

(ii) an inventor of an invention made under a contract involving cosponsored, cost-sharing or joint venture research or development and the contractor is required to make a substantial contribution of funds, facilities, or equipment to the work performed under the contract,

the Federal agency is authorized to transfer or assign whatever rights it may acquire, or may have the right to acquire, in the invention from its employee to the contractor subject to the same conditions set forth in this title as are applicable to the rights the contractor derived through its own contract;

(3) that with respect to any subject invention to which a contractor elects to retain title, the Government shall have (unless additional rights have been taken under subsection (a) of this section) a nonexclusive, nontransferrable, irrevocable, paid-up license to make, use, and sell the subject invention throughout the world by or on behalf of the Government;

(4) that a Federal agency may require written reports on the commercial use or other forms of utiliza-

tion or efforts toward obtaining commercial utilization made by the contractor or its licensees or assignees with respect to any subject invention to which the contractor elects title, pursuant to this section, except, that any such report, as well as any information on utilization or efforts toward obtaining utilization obtained as part of a proceeding under section 303 of this title, shall be treated by the agency as commercial or financial information obtained from a person and privileged or confidential and not subject to disclosure under section 552 of title 5, United States Code, relating to freedom of information;

(5) that the contractor, in the event a United States patent application is filed by or on its behalf or by any assignee of the contractor, shall include within the specification of such application and any patent issuing thereon, a statement specifying that the invention was made with Government support and that the Government has certain rights in the invention;

(6) that the balance of any royalties or income earned on subject inventions by a contractor operating a Government-owned, contractor-operated facility (if the invention was made in the facility) shall, after payment of expenses (including payments to inventors), be used for scientific research and development in the fa-

cility consistent with the mission and objectives of such facility;

(7) that the contractor, in cases when it has the choice under section 301(a) to retain title to a subject invention but does not elect to retain title, shall retain a nonexclusive, royalty-free, paid-up, worldwide license (including the right to sublicense affiliates, subsidiaries, and existing licensees to whom the contractor is legally obligated to sublicense) in any subject invention to which the Government obtains title, which license shall be revocable only to the extent necessary for the Government to grant an exclusive license; except, that the contractor shall not be entitled to such a license if the contractor has fraudulently failed to disclose the subject invention;

(8) that a transfer by the contractor of the rights in any subject invention will be subject to the rights of the Government provided by this section and sections 302, 303 and 307; and

(9) such other administrative requirements as the Secretary determines to be necessary to effectuate the rights of the Government and the contractor as specified in this Act and as are not inconsistent with this Act.

WAIVER

SEC. 302. (a) A Federal agency may at any time waive all or any part of the rights of the Government under section 301(c) to any subject invention or class of subject inventions made or which may be made under a contract or class of contracts if the agency determines that—

(1) the interests of the Government and the general public will be best served thereby; or

(2) the contract involves cosponsored, cost-sharing, or joint venture research or development and the contractor or other sponsor or joint venturer is required to make a substantial contribution of funds, facilities, or equipment to the work performed under the contract.

(b) The Federal agency shall maintain a record, which shall be made public and periodically updated, of determinations made under subsection (a).

(c) In making determinations under subsection (a)(1), the Federal agency shall consider at least the following objectives:

(1) encouraging wide availability to the public of the benefits of Government-sponsored research and development in the shortest practicable time;

(2) promoting the commercial utilization of inventions made under Government contracts;

(3) encouraging participation by private persons (especially the most highly qualified persons) in Government-sponsored research and development programs; and

(4) fostering competition and preventing the creation or maintenance of situations inconsistent with the antitrust laws.

(d) With respect to contracts in which the Government retains rights under section 301(a) a Federal agency may, after a subject invention has been identified, waive the rights the Government has in the invention under the contract and (with respect to the subject invention) proceed either (1) under the rules promulgated in section 301(c) as though the contractor had the right to elect to retain title, or (2) to waive its rights, subject to the conditions of subsections (a), (b), and (c) of section 302.

MARCH-IN RIGHTS

SEC. 303. (a) Where a contractor has elected to retain title to a subject invention under section 301 or 302, the Federal agency shall have the right, pursuant to policies, procedures, and guidelines of the Secretary and subject to the provisions of subsection (b) of this section, to grant or require the contractor or his assignee to grant a nonexclusive, partially exclusive, or exclusive license to a responsible applicant or applicants, upon terms reasonable under the circumstances, if the head of the agency or his designee determines that such action is necessary—

(1) because the contractor, assignee, or licensee has not taken, or is not expected to take within a reasonable time, effective steps to achieve practical application of the invention;

(2) to alleviate serious health or safety needs which are not reasonably satisfied by the contractor or his assignees or licensees; or

(3) to meet requirements for public use specified by Federal regulation which are not reasonably satisfied by the contractor or his assignees or licensees.

(b) A determination made pursuant to this section shall not be considered a contract dispute and shall not be subject to the Contract Disputes Act (41 U.S.C. 601 et seq.). Any contractor assignee or exclusive licensee adversely affected by a determination under this section may, at any time within sixty days after the determination is issued, file a petition in the United States Court of Claims, which shall have jurisdiction to determine the matter de novo and to affirm, reverse, or modify as appropriate, the determination of the Federal agency.

BACKGROUND RIGHTS

SEC. 304. (a) Nothing contained in this Act shall be construed to deprive the owner of any background patent or of such right as the owner may have under such patent.

(b) No contract shall contain a provision allowing a Federal agency to require the licensing to third parties of inventions owned by the contractor that are not subject inventions unless such provision has been approved by the head of the agency and a written justification has been signed by the head of the agency. Any such provision shall clearly state whether the licensing may be required in connection with the practice of a subject invention, a specifically identified work object, or both. The head of the agency may not delegate the authority to approve such provisions or to sign the justification required for such provisions.

(c) A Federal agency shall not require the licensing of third parties under any such provision unless the head of the agency determines that the use of the invention by others is necessary for the practice of a subject invention or for use of a work object of the contract and that such action is necessary to achieve the practical application of the subject invention or work object. Any such determination shall be on the record after an opportunity for an agency hearing, and the contractor shall be given prompt notification of the determination by certified or registered mail.

TITLE IV—MISCELLANEOUS

DEFINITIONS

SEC. 401. As used in this Act (excluding section 402), the term—

(1) "person" means any person as defined in section 1 of title 1, United States Code, or other entity;

(2) "Government" means the Government of the United States of America;

(3) "Federal agency" means an executive agency (as defined in section 105 of title 5, United States Code), and the military departments (as defined in section 102 of title 5, United States Code);

(4) "small business firm" means a small business concern as defined in section 2 of the Small Business Act (15 U.S.C. 632) and implementing regulations of the Administrator of the Small Business Administration; and

(5) "nonprofit organization" means universities and other institutions of higher education or an organization of the type described in section 501(c)(3) of the Internal Revenue Code of 1954 (26 U.S.C. 501(c)(3)) and exempt from taxation under section 501(a) of the Internal Revenue Code of 1954 (26 U.S.C. 501(a)), or any nonprofit scientific or educational organization qualified under a State nonprofit organization statute;

(6) "contract" means any contract, grant, or cooperative agreement entered into between any Federal agency (other than the Tennessee Valley Authority) and any person other than a small business firm or nonprofit organization where a purpose of the contract is the conduct of experimental, developmental, or research work; and such term includes any assignment, substitution of parties, or subcontract of any tier entered into or executed for the conduct of experimental, developmental, or research work in connection with the performance of that contract;

(7) "contractor" means any person or entity (other than a Federal agency, nonprofit organization, or small business firm) which is a party to the contract;

(8) "Secretary" means the Secretary of Commerce;

(9) "Director" means the Director of the Office of Science and Technology Policy, or his designee;

(10) "invention" means any invention or discovery which is or may be patentable or otherwise protectable under title 35, United States Code, or any novel variety of plant which is or may be protectable under the Plant Variety Protection Act (7 U.S.C. 2321 et seq.);

(11) "subject invention" means any invention of a contractor conceived or first actually reduced to prac-

tice in the performance of work under a contract, except that in the case of a variety of plant, the date of determination (as defined in section 41(d) of the Plant Variety Protection Act (7 U.S.C. 2401(d)) must also occur during the period of contract performance;

(12) "practical application" means to manufacture (in the case of a composition or product); to practice (in the case of a process or method); or to operate (in the case of a machine or system); and in each case, under such conditions as to establish that the invention is being utilized and that its benefits are, to the extent permitted by law or Government regulations, available to the public on reasonable terms or through reasonable licensing arrangements; and

(13) "antitrust law" means the laws included within the definition of the term "antitrust laws" in section 1 of the Clayton Act (15 U.S.C. 12), as amended.

AMENDMENTS TO OTHER ACTS

Sec. 402. The following Acts are hereby amended as follows:

(1) Section 205(a) of the Act of August 14, 1946 (7 U.S.C. 1624(a); 60 Stat. 1090), is amended by striking the last sentence thereof.

(2) Section 501(c) of the Federal Coal Mine Health and Safety Act of 1969 (30 U.S.C. 951(c); 83 Stat. 742) is amended by striking the last sentence thereof.

(3) Section 106(c) of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1395(c); 80 Stat. 721) is repealed.

(4) Section 12(a) of the National Science Foundation Act of 1950 (42 U.S.C. 1871(a); 82 Stat. 360) is repealed.

(5)(A) Section 152 of the Atomic Energy Act of 1954 (42 U.S.C. 2182; 68 Stat. 943) is repealed, except that such section shall continue to be effective with respect to any application for a patent in which the statement under oath referred to in such section has been filed or requested to be filed by the Commissioner of Patents and Trademarks prior to the effective date of this Act.

(B) The item relating to section 152 in the table of contents of the Atomic Energy Act of 1954 is amended to read as follows:

"Sec. 152. Repealed".

(6) The National Aeronautics and Space Act of 1958 (42 U.S.C. 2451 et seq.; 72 Stat. 426) is amended—

(A) by striking out section 305 thereof (42 U.S.C. 2457), but subsections (c), (d), and (e) of such section shall continue to be effective with respect to any application for patents in which the written statement referred to in subsection (c) of such section has been filed or requested to be filed by the Commissioner of Patents and Trademarks prior to the effective date of this Act;

(B) by striking out, in section 306(a) thereof (42 U.S.C. 2458(a)), "(as defined by section 305)", and by striking out "the Inventions and Contributions Board, established under section 305 of this Act" and inserting in lieu thereof "an Invention and Contributions Board which shall be established by the Administrator within the Administration";

(C) by striking out the period at the end of section 203(c) thereof (42 U.S.C. 2473(c)) and inserting in lieu thereof a semicolon, and by adding at the end thereof the following new paragraph:

"(14) to provide effective contractual provisions for the reporting of the results of the activities of the Administration, including full and complete technical reporting of any invention made in the course of or under any contract of the Administration, except that no reporting of inventions pursuant to this paragraph shall be in conflict with or require the reporting of any subject invention earlier than required under section 301(c) of the Uniform Science and Technology Research and Development Utilization Act or its implementing regulations or section 202(c)(1) of title 35 of the United States Code or its implementing regulations;";

(D) striking out, in section 203(c) thereof (42 U.S.C. 2473(c)), the following: "(including patents and rights thereunder)"; and

(E) adding at the end of section 203 thereof (42 U.S.C. 2473) the following new subsection:

"(d) For the purposes of chapter 17 of title 35, United States Code, the Administration shall be considered a defense agency of the United States."

(7) Section 6 of the Act of July 7, 1960 (30 U.S.C. 666; 74 Stat. 337), is repealed.

(8) Section 4 of the Helium Act Amendments of 1960 (50 U.S.C. 167b; 74 Stat. 920) is amended by striking all after "utilization" and inserting in lieu thereof a period.

(9) Section 32 of the Arms Control and Disarmament Act (22 U.S.C. 2572; 75 Stat. 634) is repealed.

(10) Subsection (e) of section 302 of the Appalachian Regional Development Act of 1965 (40 U.S.C. App. 302(e); 79 Stat. 5) is repealed.

(11) Subsections (a) through (k), (m), and (n) of section 9 of the Federal Nonnuclear Energy Research and Development Act of 1974 (42 U.S.C. 5908; 88 Stat. 1887) are repealed.

(12) Section 5(d) of the Consumer Product Safety Act (15 U.S.C. 2054(d); 88 Stat. 1211) is repealed.

(13) Section 3 of the Act of April 5, 1944 (30 U.S.C. 323; 58 Stat. 191), is repealed.

(14) Section 8001(c)(3) of the Solid Waste Disposal Act (42 U.S.C. 6981(c)(3); 90 Stat. 2829) is repealed.

(15) Chapter 38 of title 35, United States Code, is amended—

(A) by adding "or any novel variety of plant which is or may be protectable under the Plant Variety Protection Act (7 U.S.C. 2321 et seq.)" immediately after "title" in section 201(d);

(B) by adding ", except that in the case of a variety of plant, the date of determination (as defined in section 41(d) of the Plant Variety Protection Act (7 U.S.C. 2401(d)) must also occur during the period of contract performance" immediately after "agreement" in section 201(e);

(C) in section 202(a)—

(i) by amending clause (i) to read as follows: "(i) when the contractor is not located in the United States or does not have a place of business located in the United States or is subject to the control of a foreign government"; and

(ii) by striking "or (iii)" and inserting in lieu thereof the following: ", (iii) when the funding agreement is entered into under a program that implements a formal international treaty, agreement, or arrangement including, but not limited to, agreements of cooperation in science and technology or military agreements relating to weapons development or production, and it is determined by the agency that rights in the Government greater than a nonexclusive license are necessary for the agency to fulfill its obligations under the international treaty, agreement, or arrangement; or (iv)";

(D) by amending section 202(b) to read as follows:

"(b)(1) The rights of the Government under paragraph (a) shall not be exercised by a Federal agency unless it first determines that at least one of the conditions identified in clauses (i) through (iv) of paragraph (a) exists. Except in the case of paragraph (a)(iv), the agency shall file with the Secretary of Commerce, within thirty days after the award of the applicable funding agreement, a statement stating such determination. In the case of a determination under paragraph (a) (ii) or (iii), the statement shall include an analysis justifying the determination. If the Secretary of Commerce believes that any individual determination or pattern of determinations is contrary to the policies and objectives of this chapter or otherwise not in conformance with this chapter, the Secretary shall so advise the head of the agency concerned and the Director of the Office of Science and Technology Policy, and recommend corrective actions.

"(2) Whenever the Director of the Office of Science and Technology Policy has determined that one or more Federal agencies are utilizing the authority of clauses (i) through (iii) of paragraph (a) in a manner that is contrary to the policies and objectives of this chapter, the Director is authorized to issue policies, procedures, and guidelines describing classes of situations in which agencies may not exercise the authorities of those clauses.";

(E) by amending paragraphs (1), (2), and (3) of section 202(c) to read as follows:

"(1) That the contractor disclose each subject invention to the Federal agency within a reasonable time after it becomes known to contractor personnel responsible for the administration of patent matters, and that the Federal Government may receive title to any subject invention not disclosed to it within such time.

"(2) That the contractor make a written election within two years after disclosure to the Federal agency (or such additional time as may be approved by the Federal agency) whether the contractor will retain title to a subject invention, except that (A) in any case where publication, on sale, or public use, has initiated the one year statutory period in which valid patent protection can still be obtained in the United States, the period for election may be shortened by the Federal agency to a date that is not more than sixty days prior to the end of the statutory period, and (B) the Federal Government may receive title to any subject invention in which the contractor does not elect to retain rights or fails to elect rights within such times.

"(3) That a contractor electing rights in a subject invention agrees to file a patent application prior to any statutory bar date that may occur under this title due to publication, on sale, or public use, and shall thereafter file corresponding patent applications in other countries in which it wishes to retain title within reasonable times, and that the Federal Government may receive title to any subject inventions in the United States or other countries in which the contractor has not filed patent applications on the subject invention within such times.";

(F) by inserting a period after the word "world" in paragraph (c)(4) thereof and striking out the remainder of that subsection;

(G) by striking "may" in section 202(c)(5) and inserting in lieu thereof "as well as any information on utilization or efforts at obtaining utilization obtained as part of a proceeding under section 203 of this chapter shall";

(H) by striking clauses (A) and (B) in section 202(c)(7) and redesignating clauses (C) and (D) of such section as clauses (A) and (B), respectively;

(I) by adding the following new paragraph at the end of section 202:

"(g)(1) A Federal agency may at any time waive all or any part of the rights of the United States, under paragraphs (c) (4) through (8) of this section and section 204 of this chapter, to any subject inventions made under a funding agreement or class of funding agreements if the agency determines (A) that the interests of the United States and the general public will be best served thereby; or (B) the funding agreement involves cosponsored, cost sharing, or joint venture research or development and the contractor or other sponsor or joint venturer is required to make or has made a substantial contribution of funds, facilities, or equipment to the work performed under the funding agreement. The agency shall maintain a record, which shall be made public and periodically updated, of determinations made under this paragraph.

"(2) In making determinations under subparagraph (1)(A) of this paragraph, the agency shall consider at least the following objectives:

"(A) encouraging the wide availability to the public of the benefits of Government-sponsored research and development in the shortest practicable time;

"(B) promoting the commercial utilization of inventions made under Government funding agreements;

"(C) encouraging participation by private persons (especially the most highly qualified persons) in Government-sponsored research and development programs; and

"(D) fostering competition and preventing the creation or maintenance of situations inconsistent with the antitrust laws.";

(J) by adding at the end of section 203 the following: "A determination pursuant to this section shall not be considered a contract dispute and shall not be subject to the Contract Disputes Act (41 U.S.C. 601 et seq.). Any contractor, assignee, or exclusive licensee adversely affected by a determination under this section may, at any time within sixty days after the determination is issued, file a petition in the United States Court of Claims, which shall have jurisdiction to determine the manner de novo and to affirm, reverse, or modify as appropriate, the determination of the Federal agency."; and

(K) by amending section 206 to read as follows:

"§ 206. Uniform clauses and regulations

"The Secretary of Commerce may issue regulations which may be made applicable to Federal agencies implementing the provisions of sections 202 through 204 of this chapter and shall establish standard funding agreement provisions required under this chapter.".

(16) Section 6(e) of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3705(e); 94 Stat. 2313) is repealed.

(17) Section 10(a) of the Act of June 29, 1935 (7 U.S.C. 427i(a)) is amended by striking the last sentence thereof.

(18) Section 427(b) of the Federal Mine Safety and Health Act of 1977 (30 U.S.C. 937(b)) is amended by striking the last sentence thereof.

(19) Section 306(d) of the Surface Mining Control and Reclamation Act of 1977 (30 U.S.C. 1226(d)) is amended by striking the first two sentences thereof.

(20) Section 21(d) of the Federal Fire Prevention and Control Act of 1974 (15 U.S.C. 2218(d)) is repealed.

(21) Section 6(b) of the Solar Photovoltaic Energy Research, Development, and Demonstration Act of 1978 (42 U.S.C. 5585(b)) is amended by striking out "7, 8, and 9" and inserting in lieu thereof "7 and 8".

(22) Section 12 of the Native Latex Commercialization and Economic Development Act of 1978 (7 U.S.C. 178j) is repealed.

(23) Section 408 of the Water Research and Development Act of 1978 (42 U.S.C. 7879) is repealed.

RELATIONSHIP TO ANTITRUST LAWS

SEC. 403. Nothing in this Act shall be deemed to convey to any person immunity from civil or criminal liability, or to create any defense to actions, under any antitrust law.

EFFECTIVE DATE

SEC. 404. (a) This Act shall take effect six months after the date of the enactment of this Act.

(b) After the effective date of this Act, each Federal agency is authorized, notwithstanding any other law governing the disposition of rights in subject inventions, to allow a contractor or an inventor to retain title to subject inventions made under contracts awarded prior to the effective date of this Act, subject to the same terms and conditions as would apply under this Act had the contract been entered into after the effective date of this Act.

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CHAPTER 18—PATENT RIGHTS IN INVENTIONS MADE WITH FEDERAL ASSISTANCE

Sec.
200. Policy and objective.
201. Definitions.
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1982 Amendment. Pub. L. 97-256, Title I, § 101(5), Sept. 8, 1982, 96 Stat. 816, redesignated chapter 38, as added by Pub. L. 96-517, § 6(a), Dec. 12, 1980, 94 Stat. 3018, comprising sections 200 to 211, as chapter 18, and transferred chapter 18, as so redesignated, to the end of this part from the end of part IV.

§ 200. Policy and objective

It is the policy and objective of the Congress to use the patent system to promote the utilization of inventions arising from federally supported research or development; to encourage maximum participation of small business firms in federally supported research and development efforts; to promote collaboration between commercial concerns and nonprofit organizations, including universities; to ensure that inventions made by nonprofit organizations and small business firms are used in a manner to promote free competition and enterprise; to promote the commercialization and public availability of inventions made in the United States by United States industry and labor; to ensure that the Government obtains sufficient rights in federally supported inventions to meet the needs of the Government and protect the public against nonuse or unreasonable use of inventions; and to minimize the costs of administering policies in this area.

(Added Pub.L. 96-517, § 6(a), Dec. 12, 1980, 94 Stat. 3019.)

Effective Date. Section effective July 1, 1981, but implementing regulations authorized to be issued earlier, see section 8(f) of Pub.L. 96-517, set out as a note under section 41 of this title.

Legislative History. For legislative history and purpose of Pub.L. 96-517, see 1980 U.S. Code Cong. and Adm.News, p. 6460.

§ 201. Definitions

As used in this chapter—

(a) The term "Federal agency" means any executive agency as defined in section 105 of title 5, United States Code, and the military departments as defined by section 102 of title 5, United States Code.

(b) The term "funding agreement" means any contract, grant, or cooperative agreement entered into between any Federal agency, other than the Tennessee Valley Authority, and any contractor for the performance of experimental, developmental, or research work funded in whole or in part by the Federal Government. Such term includes any assignment, substitution of parties, or subcontract of any type entered into for the performance of experimental developmental, or research work under a funding agreement as herein defined.

(c) The term "contractor" means any person, small business firm, or nonprofit organization that is a party to a funding agreement.

(d) The term "invention" means any invention or discovery which is or may be patentable or otherwise protectable under this title.

(e) The term "subject invention" means any invention of the contractor conceived or first actually reduced to practice in the performance of work under a funding agreement.

(f) The term "practical application" means to manufacture in the case of a composition or product, to practice in the case of a process or method, or to operate in the case of a machine or system; and, in each case, under such conditions as to establish that the invention is being utilized and that its benefits are to the extent permitted by law or Government regulations available to the public on reasonable terms.

(g) The term "made" when used in relation to any invention means the conception or first actual reduction to practice of such invention.

(h) The term "small business firm" means a small business concern as defined at section 2 of Public Law 85–536 (15 U.S.C. 632) and implementing regulations of the Administrator of the Small Business Administration.

(i) The term "nonprofit organization" means universities and other institutions of higher education or an organization of the type described in section 501(c)(3) of the Internal Revenue Code of 1954 (26 U.S.C. 501(c)) and exempt from taxation under section 501(a) of the Internal Revenue Code (26 U.S.C. 501(a)) or any nonprofit scientific or educational organization qualified under a State nonprofit organization statute.

(Added Pub.L. 96–517, § 6(a), Dec. 12, 1980, 94 Stat. 3019.)

Effective Date. Section effective July 1, 1981, but implementing regulations authorized to be issued earlier, see section 8(f) of Pub.L. 96–517, set out as a note under section 41 of this title.

Legislative History. For legislative history and purpose of Pub.L. 96–517, see 1980 U.S. Code Cong. and Adm.News, p. 6460.

§ 202. Disposition of rights

(a) Each nonprofit organization or small business firm may, within a reasonable time after disclosure as required by paragraph (c)(1) of this section, elect to retain title to any subject invention: *Provided, however,* That a funding agreement may provide otherwise (i) when the funding agreement is for the operation of a Government-owned research or production facility, (ii) in exceptional circumstances when it is determined by the agency that restriction or elimination of the right to retain title to any subject invention will better promote the policy and objectives of this chapter or (iii) when it is determined by a Government authority which is authorized by statute or Executive order to conduct foreign intelligence or counter-intelligence activities that the restriction or elimination of the right to retain title to any subject invention is necessary to protect the security of such activities. The rights of the nonprofit organization or small business firm shall be subject to the provisions of paragraph (c) of this section and the other provisions of this chapter.

(b)(1) Any determination under (ii) of paragraph (a) of this section shall be in writing and accompanied by a written statement of facts justifying the determination. A copy of each such determination and justification shall be sent to the Comptroller General of the United States within thirty days after the award of the applicable funding agreement. In the case of determinations applicable to funding agreements with small business firms copies shall also be sent to the Chief Counsel for Advocacy of the Small Business Administration.

(2) If the Comptroller General believes that any pattern of determinations by a Federal agency is contrary to the policy and objectives of this chapter or that an agency's policies or practices are otherwise not in conformance with this chapter, the Comptroller General shall so advise the head of the agency. The head of the agency shall advise the Comptroller General in writing within one hundred and twenty days of what action, if any, the agency has taken or plans to take with respect to the matters raised by the Comptroller General.

(3) At least once each year, the Comptroller General shall transmit a report to the Committees on the Judiciary of the Senate and House of Representatives on the manner in which this chapter is being implemented by the agencies and on such other aspects of Government patent policies and practices with respect to federally funded inventions as the Comptroller General believes appropriate.

(c) Each funding agreement with a small business firm or nonprofit organization shall contain appropriate provisions to effectuate the following:

(1) A requirement that the contractor disclose each subject invention to the Federal agency within a reasonable time after it is made and that the Federal Government may receive title to any subject invention not reported to it within such time.

(2) A requirement that the contractor make an election to retain title to any subject invention within a reasonable time after disclosure and that the Federal Government may receive title to any subject invention in which the contractor does not elect to retain rights or fails to elect rights within such time.

(3) A requirement that a contractor electing rights file patent applications within reasonable times and that the Federal Government may receive title to any subject inventions in the United States or other countries in which the contractor has not filed patent applications on the subject invention within such times.

(4) With respect to any invention in which the contractor elects rights, the Federal agency shall have a nonexclusive, nontransferable, irrevocable, paid-up license to practice or have practiced for or on behalf of the United States any subject invention throughout the world, and may, if provided in the funding agreement, have additional rights to sublicense any foreign government or international organization pursuant to any existing or future treaty or agreement.

(5) The right of the Federal agency to require periodic reporting on the utilization or efforts at obtaining utilization that are being made by the contractor or his licensees or assignees: *Provided*, That any such information may be treated by the Federal agency as commercial and financial information obtained from a person and privileged and confidential and not subject to disclosure under section 552 of title 5 of the United States Code.

(6) An obligation on the part of the contractor, in the event a United States patent application is filed by or on its behalf or by any assignee of the contractor, to include within the specification of such application and any patent issuing thereon, a statement specifying that the invention was made with Government support and that the Government has certain rights in the invention.

(7) In the case of a nonprofit organization, (A) a prohibition upon the assignment of rights to a subject invention in the United States without the approval of the Federal agency, except where such assignment is made to an organization which has as one of its primary functions the management of inventions and which is not, itself, engaged in or does not hold a substantial interest in other organizations engaged in the manufacture or sale of products or the use of processes that might utilize the invention or be in competition with embodiments of the invention (provided that such assignee shall be subject to the same provisions as the contractor); (B) a prohibition against the granting of exclusive licenses under United States Patents or Patent Applications in a subject invention by the contractor to persons other than small business firms for a period in excess of the earlier of five years from first commercial sale or use of the invention or eight years from the date of the exclusive license excepting that time before regulatory agencies necessary to obtain premarket clearance unless, on a case-by-case basis, the Federal agency approves a longer exclusive license. If exclusive field of use licenses are granted, commercial sale or use in one field of use shall not be deemed commercial sale or use as to other fields of use, and a first commercial sale or use with respect to a product of the invention shall not be deemed to end the exclusive period to different subsequent products covered by the invention; (C) a requirement that the contractor share royalties with the inventor; and (D) a requirement that the balance of any royalties or income earned by the contractor with respect to subject inventions, after payment of expenses (including payments to inventors) incidental to the administration of subject inventions, be utilized for the support of scientific research or education.

(8) The requirements of sections 203 and 204 of this chapter.

(d) If a contractor does not elect to retain title to a subject invention in cases subject to this section, the Federal agency may consider and after consultation with the contractor grant requests for retention of rights by the inventor subject to the provisions of this Act and regulations promulgated hereunder.

(e) In any case when a Federal employee is a coinventor of any invention made under a funding agreement with a nonprofit organization or small business firm, the Federal agency employing such coinventor is authorized to transfer or assign whatever rights it may acquire in the subject invention from its employee to the contractor subject to the conditions set forth in this chapter.

(f)(1) No funding agreement with a small business firm or nonprofit organization shall contain a provision allowing a Federal agency to require the licensing to third parties of inventions owned by the contractor that are not subject inventions unless such provision has been approved by the head of the agency and a written justification has been signed by the head of the agency. Any such provision shall clearly state whether the licensing may be required in connection with the practice of a subject invention, a specifically identified work object, or both. The head of the agency may not delegate the authority to approve provisions or sign justifications required by this paragraph.

(2) A Federal agency shall not require the licensing of third parties under any such provision unless the head of the agency determines that the use of the invention by others is necessary for the practice of a subject invention or for the use of a work object of the funding agreement and that such action is necessary to achieve the practical application of the subject invention or work object. Any such determination shall be on the record after an opportunity for an agency hearing. Any action commenced for judicial review of such determination shall be brought within sixty days after notification of such determination.

(Added Pub.L. 96-517, § 6(a), Dec. 12, 1980, 94 Stat. 3020.)

References in Text. This Act, referred to in subsec. (d), means Pub.L. 96-517 which enacted chapters 18 (sections 200 to 211) and 30 (sections 301 to 307) of this title, amended sections 41, 42 and 154 of this title and sections 1113 of Title 15 and 2186, 2457 and 5908 of Title 42, and enacted provisions set out as a note under section 41 of this title.

Effective Date. Section effective July 1, 1981, but implementing regulations authorized to be issued earlier, see section 8(f) of Pub.L. 96-517, set out as a note under section 41 of this title.

Legislative History. For legislative history and purpose of Pub.L. 96-517, see 1980 U.S. Code Cong. and Adm.News, p. 6460.

Library References

Patents 🔑90(1), 221.
C.J.S. Patents §§ 84 et seq., 280.

§ 203. March-in rights

With respect to any subject invention in which a small business firm or nonprofit organization has acquired title under this chapter, the Federal agency under whose funding agreement the subject invention was made shall have the right, in accordance with such procedures as are provided in regulations promulgated hereunder to require the contractor, an assignee or exclusive licensee of a subject invention to grant a nonexclusive, partially exclusive, or exclusive license in any field of use to a responsible applicant or applicants, upon terms that are reasonable under the circumstances, and if the contractor, assignee, or exclusive licensee refuses such request, to grant such a license itself, if the Federal agency determines that such—

(a) action is necessary because the contractor or assignee has not taken, or is not expected to take within a reasonable time, effective steps to achieve practical application of the subject invention in such field of use;

(b) action is necessary to alleviate health or safety needs which are not reasonably satisfied by the contractor, assignee, or their licensees;

(c) action is necessary to meet requirements for public use specified by Federal regulations and such requirements are not reasonably satisfied by the contractor assignee, or licensees; or

(d) action is necessary because the agreement required by section 204 has not been obtained or waived or because a licensee of the exclusive right to use or sell any subject invention in the United States is in breach of its agreement obtained pursuant to section 204.

(Added Pub.L. 96-517, § 6(a), Dec. 12, 1980, 94 Stat. 3022.)

Effective Date. Section effective July 1, 1981, but implementing regulations authorized to be issued earlier, see section 8(f) of Pub.L. 96-517, set out as a note under section 41 of this title.

Legislative History. For legislative history and purpose of Pub.L. 96-517, see 1980 U.S. Code Cong. and Adm.News, p. 6460.

Library References

Patents 🔑221.
C.J.S. Patents § 280.

§ 204. Preference for United States industry

Notwithstanding any other provision of this chapter, no small business firm or nonprofit organization which receives title to any subject invention and no assignee of any such small business firm or nonprofit organization shall grant to any person the exclusive right to use or sell any subject invention in the United States unless such person agrees that any products embodying the subject invention or produced through the use of the subject invention will be manufactured substantially in the United States. However, in individual cases, the requirement for such an agreement may be waived by the Federal agency under whose funding agreement the invention was made upon a showing by the small business firm, nonprofit organization, or assignee that reasonable but unsuccessful efforts have been made to grant licenses on similar terms to potential licensees that would be likely to manufacture substantially in the United States or that under the circumstances domestic manufacture is not commercially feasible.

(Added Pub.L. 96–517, § 6(a), Dec. 12, 1980, 94 Stat. 3023.)

Effective Date. Section effective July 1, 1981, but implementing regulations authorized to be issued earlier, see section 8(f) of Pub.L. 96–517, set out as a note under section 41 of this title.

Legislative History. For legislative history and purpose of Pub.L. 96–517, see 1980 U.S. Code Cong. and Adm.News, p. 6460.

Library References

Patents ⇐221.
C.J.S. Patents § 280.

§ 205. Confidentiality

Federal agencies are authorized to withhold from disclosure to the public information disclosing any invention in which the Federal Government owns or may own a right, title, or interest (including a nonexclusive license) for a reasonable time in order for a patent application to be filed. Furthermore, Federal agencies shall not be required to release copies of any document which is part of an application for patent filed with the United States Patent and Trademark Office or with any foreign patent office.

(Added Pub.L. 96–517, § 6(a), Dec. 12, 1980, 94 Stat. 3023.)

Effective Date. Section effective July 1, 1981, but implementing regulations authorized to be issued earlier, see section 8(f) of Pub.L. 96–517, set out as a note under section 41 of this title.

Legislative History. For legislative history and purpose of Pub.L. 96–517, see 1980 U.S. Code Cong. and Adm.News, p. 6460.

§ 206. Uniform clauses and regulations

The Office of Federal Procurement Policy, after receiving recommendations of the Office of Science and Technology Policy, may issue regulations which may be made applicable to Federal agencies implementing the provisions of sections 202 through 204 of this chapter and the Office of Federal Procurement Policy shall establish standard funding agreement provisions required under this chapter.

(Added Pub.L. 96–517, § 6(a), Dec. 12, 1980, 94 Stat. 3023.)

Effective Date. Section effective July 1, 1981, but implementing regulations authorized to be issued earlier, see section 8(f) of Pub.L. 96–517, set out as a note under section 41 of this title.

Legislative History. For legislative history and purpose of Pub.L. 96–517, see 1980 U.S. Code Cong. and Adm.News, p. 6460.

Library References

Patents ⇐220.
C.J.S. Patents § 275 et seq.

§ 207. Domestic and foreign protection of federally owned inventions

Each Federal agency is authorized to—

(1) apply for, obtain, and maintain patents or other forms of protection in the United States and in foreign countries on inventions in which the Federal Government owns a right, title, or interest;

(2) grant nonexclusive, exclusive, or partially exclusive licenses under federally owned patent applications, patents, or other forms of protection obtained, royalty-free or for royalties or other consideration, and on such terms and conditions, including the grant to the licensee of the right of enforcement pursuant to the provisions of chapter 29 of this title as determined appropriate in the public interest;

(3) undertake all other suitable and necessary steps to protect and administer rights to federally owned inventions on behalf of the Federal Government either directly or through contract; and

(4) transfer custody and administration, in whole or in part, to another Federa agency, of the right, title, or interest in any federally owned invention.

(Added Pub.L. 96–517, § 6(a), Dec. 12, 1980, 94 Stat. 3023.)

Effective Date. Section effective July 1, 1981, but implementing regulations authorized to be issued earlier, see section 8(f) of Pub.L. 96–517, set out as a note under section 41 of this title.

Legislative History. For legislative history and purpose of Pub.L. 96–517, see 1980 U.S. Code Cong. and Adm.News, p. 6460.

Library References

Patents 🔑90(1), 221.
C.J.S. Patents §§ 84 et seq., 280.

§ 208. Regulations governing Federal licensing

The Administrator of General Services is authorized to promulgate regulations specifying the terms and conditions upon which any federally owned invention, other than inventions owned by the Tennessee Valley Authority, may be licensed on a nonexclusive, partially exclusive, or exclusive basis.

(Added Pub.L. 96–517, § 6(a), Dec. 12, 1980, 94 Stat. 3024.)

Effective Date. Section effective July 1, 1981, but implementing regulations authorized to be issued earlier, see section 8(f) of Pub.L. 96–517, set out as a note under section 41 of this title.

Legislative History. For legislative history and purpose of Pub.L. 96–517, see 1980 U.S. Code Cong. and Adm.News, p. 6460.

Library References

Patents 🔑220.
C.J.S. Patents § 275 et seq.

§ 209. Restrictions on licensing of federally owned inventions

(a) No Federal agency shall grant any license under a patent or patent application on a federally owned invention unless the person requesting the license has supplied the agency with a plan for development and/or marketing of the invention, except that any such plan may be treated by the Federal agency as commercial and financial information obtained from a person and privileged and confidential and not subject to disclosure under section 552 of title 5 of the United States Code.

(b) A Federal agency shall normally grant the right to use or sell any federally owned invention in the United States only to a licensee that agrees that any products embodying the invention or produced through the use of the invention will be manufactured substantially in the United States.

(c)(1) Each Federal agency may grant exclusive or partially exclusive licenses in any invention covered by a federally owned domestic patent or patent application only if, after public notice and opportunity for filing written objections, it is determined that—

(A) the interests of the Federal Government and the public will best be served by the proposed license, in view of the applicant's intentions, plans, and ability to bring the invention to practical application or otherwise promote the invention's utilization by the public;

(B) the desired practical application has not been achieved, or is not likely expeditiously to be achieved, under any nonexclusive license which has been granted, or which may be granted, on the invention;

(C) exclusive or partially exclusive licensing is a reasonable and necessary incentive to call forth the investment of risk capital and expenditures to bring the invention to practical application or otherwise promote the invention's utilization by the public; and

(D) the proposed terms and scope of exclusivity are not greater than reasonably necessary to provide the incentive for bringing the invention to practical application or otherwise promote the invention's utilization by the public.

(2) A Federal agency shall not grant such exclusive or partially exclusive license under paragraph (1) of this subsection if it determines that the grant of such license will tend substantially to lessen competition or result in undue concentration in any section of the country in any line of commerce to which the technology to be licensed relates, or to create or maintain other situations inconsistent with the antitrust laws.

(3) First preference in the exclusive or partially exclusive licensing of federally owned inventions shall go to small business firms submitting plans that are determined by the agency to be within the capabilities of the firms and equally likely, if executed, to bring the invention to practical application as any plans submitted by applicants that are not small business firms.

(d) After consideration of whether the interests of the Federal Government or United States industry in foreign commerce will be enhanced, any Federal agency may grant exclusive or partially exclusive licenses in any invention covered by a foreign patent application or patent, after public notice and opportunity for filing written objections, except that a Federal agency shall not grant such exclusive or partially exclusive license if it determines that the grant of such license will tend substantially to lessen competition or result in undue concentration in any section of the United States in any line of commerce to which the technology to be licensed relates, or to create or maintain other situations inconsistent with antitrust laws.

(e) The Federal agency shall maintain a record of determinations to grant exclusive or partially exclusive licenses.

(f) Any grant of a license shall contain such terms and conditions as the Federal agency determines appropriate for the protection of the interests of the Federal Government and the public, including provisions for the following:

(1) periodic reporting on the utilization or efforts at obtaining utilization that are being made by the licensee with particular reference to the plan submitted: *Provided*, That any such information may be treated by the Federal agency as commercial and financial information obtained from a person and privileged and confidential and not subject to disclosure under section 552 of title 5 of the United States Code;

(2) the right of the Federal agency to terminate such license in whole or in part if it determines that the licensee is not executing the plan submitted with its request for a license and the licensee cannot otherwise demonstrate to the satisfaction of the Federal agency that it has taken or can be expected to take within a reasonable time, effective steps to achieve practical application of the invention;

(3) the right of the Federal agency to terminate such license in whole or in part if the licensee is in breach of an agreement obtained pursuant to paragraph (b) of this section; and

(4) the right of the Federal agency to terminate the license in whole or in part if the agency determines that such action is necessary to meet requirements for public use specified by Federal regulations issued after the date of the license and such requirements are not reasonably satisfied by the licensee.

(Added Pub.L. 96–517, § 6(a), Dec. 12, 1980, 94 Stat. 3024.)

References in Text. Antitrust laws, referred to in subsecs. (c)(2) and (d), are classified generally to chapter 1 (section 1 et seq.) of Title 15, Commerce and Trade.

Effective Date. Section effective July 1, 1981, but implementing regulations authorized to be issued earlier, see section 8(f) of Pub.L. 96–517, set out as a note under section 41 of this title.

Legislative History. For legislative history and purpose of Pub.L. 96–517, see 1980 U.S. Code Cong. and Adm.News, p. 6460.

Library References

Patents 🔑221.
C.J.S. Patents § 280.

§ 210. Precedence of chapter

(a) This chapter shall take precedence over any other Act which would require a disposition of rights in subject inventions of small business firms or nonprofit organizations contractors in a manner that is inconsistent with this chapter, including but not necessarily limited to the following:

(1) section 10(a) of the Act of June 29, 1935, as added by title I of the Act of August 14, 1946 (7 U.S.C. 427i(a); 60 Stat. 1085);

(2) section 205(a) of the Act of August 14, 1946 (7 U.S.C. 1624(a); 60 Stat. 1090);

(3) section 501(c) of the Federal Mine Safety and Health Act of 1977 (30 U.S.C. 951(c); 83 Stat. 742);

(4) section 106(c) of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1395(c); 80 Stat. 721);

(5) section 12 of the National Science Foundation Act of 1950 (42 U.S.C. 1871(a); 82 Stat. 360);

(6) section 152 of the Atomic Energy Act of 1954 (42 U.S.C. 2182; 68 Stat. 943);

(7) section 305 of the National Aeronautics and Space Act of 1958 (42 U.S.C. 2457);

(8) section 6 of the Coal Research Development Act of 1960 (30 U.S.C. 666; 74 Stat. 337);

(9) section 4 of the Helium Act Amendments of 1960 (50 U.S.C. 167b; 74 Stat. 920);

(10) section 32 of the Arms Control and Disarmament Act of 1961 (22 U.S.C. 2572; 75 Stat. 634);

(11) subsection (e) of section 302 of the Appalachian Regional Development Act of 1965 (40 U.S.C.App. 302(e); 79 Stat. 5);

(12) section 9 of the Federal Nonnuclear Energy Research and Development Act of 1974 (42 U.S.C. 5901 [1]; 88 Stat. 1878);

(13) section 5(d) of the Consumer Product Safety Act (15 U.S.C. 2054(d); 86 Stat. 1211);

(14) section 3 of the Act of April 5, 1944 (30 U.S.C. 323; 58 Stat. 191);

(15) section 8001(c)(3) of the Solid Waste Disposal Act (42 U.S.C. 6981(c); 90 Stat. 2829);

(16) section 219 of the Foreign Assistance Act of 1961 (22 U.S.C. 2179; 83 Stat. 806);

(17) section 427(b) of the Federal Mine Health and Safety Act of 1977 (30 U.S.C. 937(b); 86 Stat. 155);

(18) section 306(d) of the Surface Mining and Reclamation Act of 1977 (30 U.S.C. 1226(d); 91 Stat. 455);

(19) section 21(d) of the Federal Fire Prevention and Control Act of 1974 (15 U.S.C. 2218(d); 88 Stat. 1548);

(20) section 6(b) of the Solar Photovoltaic Energy Research Development and Demonstration Act of 1978 (42 U.S.C. 5585(b); 92 Stat. 2516);

(21) section 12 of the Native Latex Commercialization and Economic Development Act of 1978 (7 U.S.C. 178(j) [2]; 92 Stat. 2533); and

(22) section 408 of the Water Resources and Development Act of 1978 (42 U.S.C. 7879; 92 Stat. 1360).

The Act creating this chapter shall be construed to take precedence over any future Act unless that Act specifically cites this Act and provides that it shall take precedence over this Act.

(b) Nothing in this chapter is intended to alter the effect of the laws cited in paragraph (a) of this section or any other laws with respect to the disposition of rights in inventions made in the performance of funding agreements with persons other than nonprofit organizations or small business firms.

(c) Nothing in this chapter is intended to limit the authority of agencies to agree to the disposition of rights in inventions made in the performance of work under funding agreements with persons other than nonprofit organizations or small business firms in accordance with the Statement of Government Patent Policy issued on August 23, 1971 (36 Fed.Reg. 16887), agency regulations, or other applicable regulations or to otherwise limit the authority of agencies to allow such persons to retain ownership of inventions. Any disposition of rights in inventions made in accordance with the Statement or implementing regulations, including any disposition occurring before enactment of this section, are hereby authorized.

(d) Nothing in this chapter shall be construed to require the disclosure of intelligence sources or methods or to otherwise affect the authority granted to the Director of Central Intelligence by statute or Executive order for the protection of intelligence sources or methods.

(Added Pub.L. 96-517, § 6(a), Dec. 12, 1980, 94 Stat. 3026.)

[1] So in original. Should be "5905".

[2] So in original. Should be "178j".